



Marine Corps Systems Command Program Manager for Training Systems Products & Services Information Handbook



October 2005

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From the Front Office



Colonel Walter Augustin

Program Manager for Training Systems



Mr. Daniel Torgler

Deputy Program Manager for Training Systems

Welcome to the third edition of the PM Training Systems (PM TRASYS) Products and Services Information Handbook. This handbook continues to advance as a relevant and ready reference to assist with your training systems and services management requirements. It also reflects the new organizational structure PM TRASYS will be working under starting in FY06. This new organizational structure was developed to better serve our sponsors and customers.

The PM TRASYS team remains committed to providing superior training systems, products and services to our customers. This handbook has been expanded to include the broad range of the military training products and services that have been fielded or are currently under development. We have also included information about other key members of the Marine Corps' Ground Training Consortium.

We hope that you find this handbook to be an effective information resource and that you refer to it often in support of your respective training systems management requirements. Please share this document with others who have an interest in our unique mission and the many products and services we provide in support of our Marines. We remain committed to enhancing this handbook to better meet the needs of the Marine Corps training community. We welcome your comments and recommendations as to how we can continue to improve and expand this document.

These are dynamic times to be involved in the military training enterprise. The advent of Training Transformation continues to provide us with unprecedented opportunities and resources to enhance our live, virtual, and constructive training systems and ranges. Your PM TRASYS team stands ready to fulfill your training needs.

A handwritten signature in black ink, reading "W.H. Augustin".

Colonel W.H. Augustin

Program Manager, Training Systems

A handwritten signature in black ink, reading "Daniel O. Torgler".

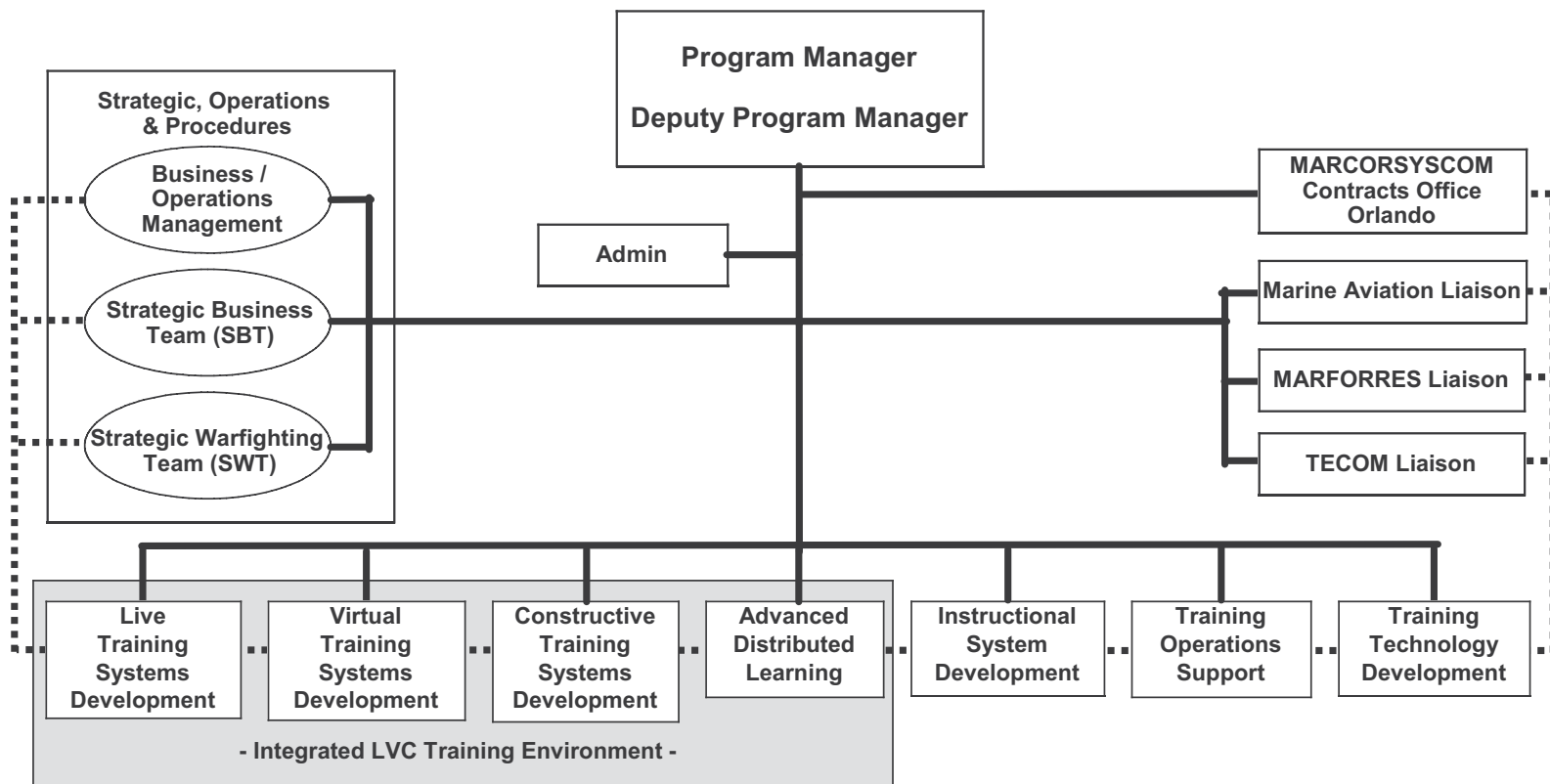
Mr. Daniel O. Torgler

Deputy Program Manager, Training Systems



PM TRASYS

Chain of Command



The Program Manager for Training Systems (PM TRASYS) is the Marine Corps Systems Command's independent Program Manager assigned the responsibility to provide products and services to support the development and life cycle sustainment of USMC training and training systems. Further, PM TRASYS provides various types of training analyses including Manpower and Training Analyses in support of Marine Corps acquisition programs.

Mission and Vision

Mission: To serve as the Marine Corps' center of excellence for providing training solutions to our Marines in a way that enables them to effectively accomplish their mission.

Vision: To be the recognized leader in providing training solutions to develop and enhance the performance of Marines.

Organization

PM TRASYS is organized around five product lines and service divisions. The five divisions are: Manpower and Training Analysis, Training Science and Technology, Training Systems Development, Training Systems Operational Support and Aviation Liaison. The graphic above illustrates these five divisions.

To accomplish our mission, PM TRASYS is staffed with professionals in the following disciplines: program management; instructional system design; systems, software, and facilities engineering; logistics; contract management; budget and financial management; business operations; and, administrative support. The personnel at PM TRASYS hold 35 Baccalaureate Degrees, 15 Master Degrees and 1 Doctorate Degrees in the areas of Engineering, Psychology, Business, Management and Education.



PM TRASYS October 2005



PM TRASYS Functional Support Areas

Business and Operations Management

The PM TRASYS Business and Operations Office is the main entry point to PM TRASYS for our customers, sponsors and industry partners. The Business Office has established a website, central telephone line (407-381-8762) and e-mail address pmtrasys@usmc.mil to support communication and to more easily direct your requests to the proper personnel within PM TRASYS.

The PM TRASYS website (www.marcorsyscom.usmc.mil) then select "TRASYS"), provides a general overview of PM TRASYS, descriptions of the product lines supported by each division, News and Events; and Business Opportunities.

The News and Events section of the website provides links to items of interest for our Industry. This section also announces upcoming conferences, displays, exhibits and Advance Planning Briefings to Industry (APBIs) where PM TRASYS participates throughout the year.

PM TRASYS participates in numerous conferences each year displaying the products and services available to our customers. These include, Marine Day in April-May at Quantico, VA, US SOCOM APBI and Conference in June at Tampa, FL, Modern Day Marine Expo in September at Quantico, VA and I/ITSEC (see page 3-9) in November-December at Orlando, FL.

Generally, PM TRASYS participates in two APBIs a year, one in April-May at Orlando, FL and one in September at Northern Virginia. The APBIs provide an opportunity for PM TRASYS to brief industry on planned near and long term procurements, as well as technologies of interest.

These APBIs also provide industry an opportunity to have one-on-one meetings with PM TRASYS.

The PM TRASYS website Business and Opportunities page provides links to procurement documentation, Request for Information and Federal Business Opportunities (FedBizOps) announcements. PM TRASYS offers a variety of ways to do business with us. These include: Broad Agency Announcements (BAAs), Small Business Innovation Research (SBIR), GSA buys, Full and Open competitions, Small Business Set Asides and the OSD sponsored Foreign Comparative Test (FCT) and Domestic Defense Acquisition Challenge (DAC) programs , www.acq.osd.mil/cto/index.htm. An additional opportunity for industry is in the support services contract used by PM TRASYS to supplement it's program staff. This is accomplished via the Marine Corps Systems Command's, Commercial Enterprise Omnibus support services (CEOss) Contract, www.marcorsyscom.usmc.mil select "ACSS".

In addition to the functions above, the Business and Operations Office provides for the strategic planning and resourcing of programs, including business development, POM efforts and staffing. The Business and Operations Office is the advisor to the front office on issues affecting operations and to project teams in the performance of acquisition related duties. It is also the mechanism to support the day to day operations, including NMCI, Integrated Data Environment, Inventory control, website management, organization and communication of management policies, procedures and objectives and the coordination of request for information (internal and external to the command). The Business and Operations office also coordinates and facilitates leveraging efforts between the "Team Orlando" service partners.



Budget and Financial Management

The PM TRASYS Budget and Financial Management Team is a dedicated focal point for all the financial requirements and the coordination of all financial actions. The team performs oversight and support for research, development, acquisition and life cycle management of training systems. The financial team influences plans, implements, directs and coordinates the financial activities and resources of a broad range of appropriations for training and training systems, business functions, and administrative costs. The financial team exercises control over all funds allocated and serves as the technical expert in the areas of financial management and accounting. The team provides PM TRASYS with management oversight and expert advisory support for making decisions regarding the financial management aspects of the complex training systems and equipment for USMC and other customers within DoD, this allows the PM to make sound program decisions, assess the accomplishments and progress of the programs.

Contracting and Contracts Management

The PM TRASYS Contracting Team is delegated their procurement authority from the Head Contracting Authority (HCA) at Marine Corps Systems Command. The PM TRASYS Contracting Team is a full service, cradle-to-grave contracting section, performing all contracting functions for PM TRASYS from requirement concept to contract closeout. The team not only performs contracting functions but also negotiates memorandums of understanding, agreements, small purchases, Broad Agency Agreements (BAA), General Services Administration (GSA) Orders, Foreign Contracts (Foreign Comparative Tests/Foreign Military Sales) and more. All contract actions are advertised in the Federal Business Opportunities (FedBizOpps) website www.eps.gov. All interested parties are then directed to the PM TRASYS Business Opportunities website for contracting documents (i.e. SOW/SOO's, RFP's, RQI's, etc.). The PM TRASYS website and Business Opportunities page can be found at the Marine Corps Systems Command website, www.mar-corsyscom.usmc.mil, select "TRASYS" then select "Business Opportunities"

Facilities Engineering

The PM TRASYS Training Facilities Engineering Team reviews and analyzes training system facility requirements and oversees the implementation of these requirements into adequately designed and constructed facilities. The team develops square footage requirements, prepares preliminary facility layouts, facility cost estimates and budget submissions for MILCON and Special Projects, to fulfill the facility requirements for training systems procured by PM TRASYS. The facilities team tracks these projects to ensure all facility requirements are identified and adequately funded. The team reviews program objectives, identifies deficiencies and recommends corrective actions on established programs. The facility team monitors and evaluates both the training systems contractor and building contractors performance in fulfilling facility requirements in prime acquisition contracts and design/construction contracts. In addition, the facilities team reviews and evaluates proposed training system changes to insure that all facility requirements affected by the proposed changes are identified, priced, funded, planned and implemented consistent with the program objectives.

Instructional Systems Development

The primary function of Instructional Systems Specialist within PM TRASYS is to perform Front End Analyses. These analyses can take the form of Manpower and Training Analyses, Job Tasks Analyses or Training System Functional Description Documents supporting MARCORSYSCOM Principal End Item procurements. We also conduct Training Situation Analyses for fielded training systems in support of TECOM. Our Instructional Systems Specialists workforce is composed of highly skilled personnel with Master's Degrees or PH.Ds in Instructional Systems Design related fields, and many are former Marines or former military.

Logistics Management

As a core discipline of the systems acquisition process, the primary objective of logistics is to ensure a structured, comprehensive framework exists to enable the integration of product support considerations throughout the acquisition and life cycle sustainment of Live, Virtual and Constructive training systems. A synopsis of PM TRASYS Logistics and Product Support capabilities are as follows:

- Maintenance Planning
- Manpower & Personnel
- Supply Support
- Support Equipment
- Training & Support
- Technical Data



- Computer Resources Support
- Facilities (see facilities engineering section)
- Packaging, Handling, Storage & Transportation
- Life Cycle Sustainment
- Inventory Management
- Configuration Management and Status Accounting
- Data Management
- Engineering Drawings and Technical Publications Management

Logistics has two primary initiatives:

The first is to influence system and equipment design. This initiative is designed to increase level of supportability of emerging training system through the proper combination and analysis of specific product support elements listed above. For legacy systems, the focus is on support system capability and effectiveness. A fully integrated system of design and logistics elements can be measure by period of high usage and availability.

The second is adopting the best logistics business practices available. Providing education, direction, and guidance on key initiatives like Performance Based Logistics and Total Life Cycle Systems Management lays the foundation for a well-organized and competent workforce. The payout is improved logistics responsiveness that is delivered consistently and reliably to shareholders and customers.

Ultimately, all logistics efforts should lead to the delivery of high quality, cost-effective training and training systems that maximize availability and readiness, while reducing total ownership costs.

Research and Development

The PM TRASYS Research and Development Team performs research and provides the technical management of the technology studies that are of interest to future Marine Corps training and USMC acquisitions programs

PM TRASYS serves as the Office of Naval Research (ONR) sponsored Technology Development Agent (TDA) managing both Applied Research (6.2) and Advanced Technology Development (6.3) activities. The research and development team also supports the Training Systems Development Division by developing capabilities to support future training systems programs. The applied research performed gives PM TRASYS and ONR the ability to focus scientific knowledge on Marine Corps training needs. The advanced technologies developments allows PM TRASYS and ONR to assess the feasibility and effectiveness of new technology applications to Marine Corps training. Ultimately, the objective of the research and development team is to provide incremental improvements to Marine Corps Ground Training Systems via the insertion of technology enhancements.

Systems and Software Engineering

The PM TRASYS Systems and Software Engineering (SSE) Team provides a wide and diverse range of engineering support to PM TRASYS. This support includes systems and software engineering expertise, and services to project teams involving in acquisition, development, and life cycle support of USMC training systems. The SSE team prepares training systems requirements and specifications, statement of work, and other contractual documentations in support of the acquisition process of training systems. The SSE Team provides government oversight to the development effort, assists in the development and integration tests, assesses design for safety, security and interoperability, and conducts government acceptance tests. The SSE Team maintains a high level of technical expertise in the areas of Live, Virtual and Constructive simulations, Position Location Information systems, Tactical Engagement Simulation systems, E-Learning, Gaming Technology, High Level Architecture and software engineering.



PM TRASYS Office Location

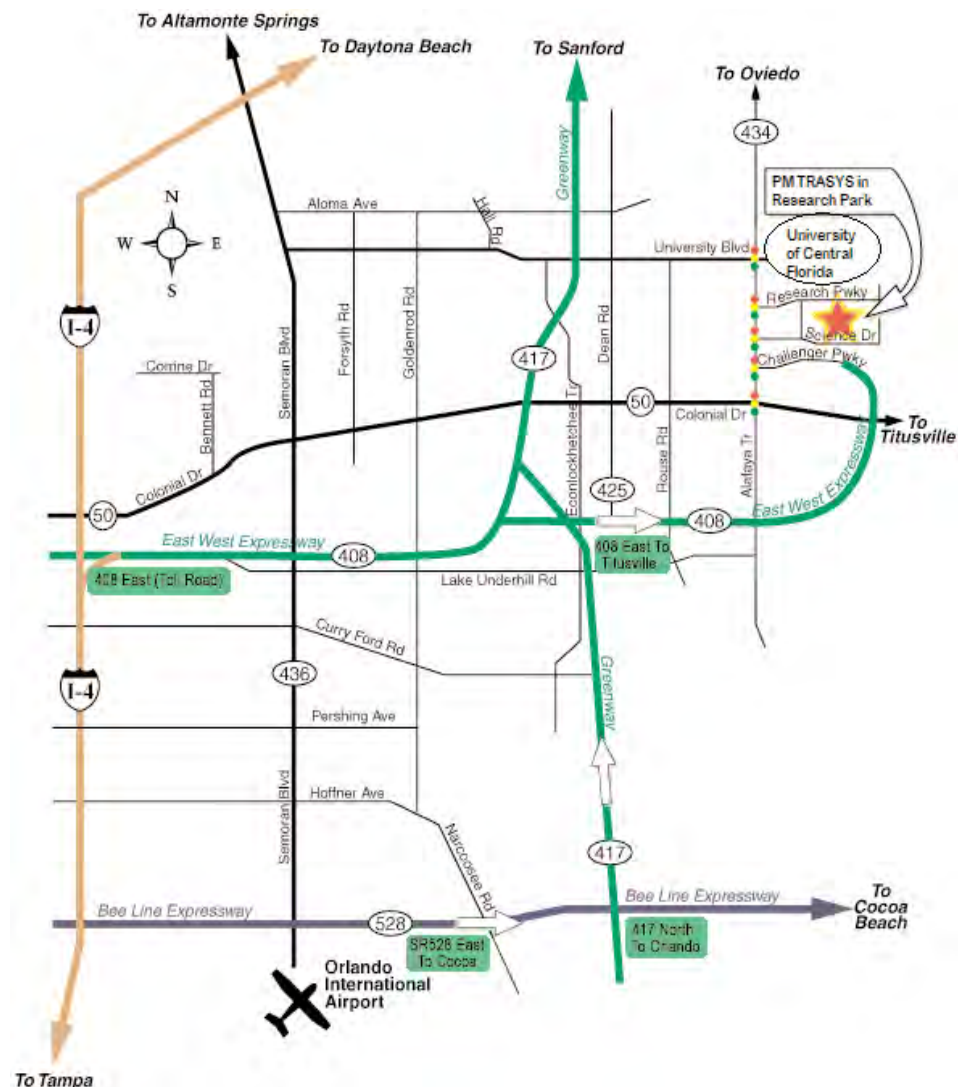
PM TRASYS is located in the Central Florida Research Park, at the corner of Research Parkway and Technology Parkway, (3100 Technology Parkway, Partnership II Building, 4th Floor) and only a few yards from the DeFlorez Complex. This location provides a cohesive and synergistic environment for PM TRASYS to work with the other military services, academia and industry.



Partnership II Building

The PM TRASYS mailing address is:

**Marine Corps Systems Command
Program Manager for Training Systems
12350 Research Parkway
Orlando, FL 32826-3275**



Awards

PM TRASYS Receives 3 2005 Commanding General's Excellence Awards



PM TRASYS received three 2005 MARCORSYSCOM Commanding General's Honorary Achievement Awards for Excellence. The awards were received in the areas of:

- Excellence in Program Management
- Excellence in Logistics, and
- Excellence in Financial Management

PM TRASYS Range Modernization and Transformation Team

The PM TRASYS Range Modernization and Transformation (RM/T) team was recognized for their extraordinary accomplishments in rapidly acquiring crucial training capabilities for the Marine Corps Air Ground Combat Center. During the onset of FY-04, it was evident that the Marine Corps was about to undergo fundamental and technological shifts in the way training was conducted. The OSD Training Transformation directive not only served notice to the services, but also energized the Joint Forces Command (JFCOM) to further develop and hone joint training across all spectrums. As a result, JFCOM initiated the Joint National Training Capabilities (JNTC) guidance and training events schedule. As a result, PM TRASYS received a \$49M Congressional Plus-up in April 2004 for Marine Corps participation in the 2004 JNTC events. It was evident that PM TRASYS would need to form a new team to tackle these new requirements in accordance with the established JNTC schedule. This team, officially known as the Range Modernization and Transformation (RM/T) team, was formed in a matter of weeks and promptly accomplished an extraordinary number of tasks

during the period of April to December 2004.

PM TRASYS Operational Support Division

The PM TRASYS Operational Support Division distinguished itself by providing exemplary lifecycle logistics expertise, a high degree of professional knowledge, and the ability to develop and implement innovative and effective integrated lifecycle logistics processes and solutions to mitigate and resolve a myriad of issues associated with procuring and sustaining the Marine Corps' emerging and fielded training systems inventory.

PM TRASYS Financial Management Team

The PM TRASYS Financial Management Team was recognized for their extraordinary achievements in the financial management of PM TRASYS' mission and customer funding. They demonstrated outstanding procedures and budget execution in support of the USMC, MARCORSYSCOM, and PM TRASYS missions.

The financial team demonstrated accountability in all areas of financial management that ensured effective accounting for approximately \$113M in mission funding and efficient use of financial resources. The dedicated scrutiny of mission funding provided the PM with the requisite management oversight and financial support to make significant financial decisions regarding financial aspects of training systems acquisitions. The lower level the scrutiny resulted in enhanced project manager awareness and ensured overall mission funding obligation goals were met or exceeded.





Live Training Systems Development



LtCol Brad Valdyke

Assistant Program Manager for
Live Training Systems Development

Mission: To design, develop, integrate, and field force-on-force and force-on-target Live Training Systems meeting USMC MAGTF needs for conducting live fire and non-live fire training, and live training aids used to conduct training in realistic live environments.

Primary focal areas of the LTS team are:

- **Range Instrumentation Systems (RIS)** - Infrastructure, data collection systems, and integration of live training components providing combat realistic interactions of live training audiences with live or simulated Opposing Forces, and after action review/data capture capabilities.
- **Tactical Engagement Simulation Systems (TESS)** - a family of training systems which simulate the weapons interaction of friendly and opposing forces direct and indirect fires.
- **Opposing Force Simulations** - Opposing force surrogates providing indication of enemy presence and maneuver. Targets, Battle Field Effects (BES), and Training-Improvised Explosive Devices (T-IEDs) are to be integrated with other Live Training Systems to provide increased interaction and sense of realism of OPFOR fire and maneuver.
- **Military Operations in Urban Terrain (MOUT)** - Urban training systems providing representative and re-configurable environments for both live-fire (ball service ammunition) and non-live fire (simunitions, LASER engagement) urban warfare training.
- **Training Sustainment Programs** - system fieldings and upgrades to maintain or improve live training

system capabilities and training relevancy. These efforts include the Ground Range Sustainment Program (GRSP) and efforts not normally considered sustainment provided by Contractor Operations and Maintenance Support (COMS).

- **Training Transformation (T2)** of the Live training domain is dependent upon integration of systems across the above focal areas plus interaction with Virtual and Constructive Simulations - providing a flexible training environment able to expand in relationship to MAGTF and Joint training audience compositions. Integrating live and simulated training technologies, the training capabilities provided by the system of systems are able to enhance live-fire, force-on-target, and force-on-force training by providing after action review/ground truth feedback, realistic representation of opposing forces (OPFOR) and enhanced range and exercise control capabilities. Development of the live training systems is performed within a systems engineering process outlining the current "as-is" USMC Live Training Environment Architecture while also designing to meet a future USMC Live-Virtual-Constructive Training Environment (LVC-TE) end-state.

Ground Range Sustainment Program (GRSP)

The Range and Training Area Management Division of Training and Education Command has partnered with the Program Manager for Training Systems, Marine Corps System Command (PMTRASYS) and the Naval Surface Warfare Center, Corona Division (NSWC Corona) to establish a Ground Range Sustainment Program (GRSP). This program will gather potential projects for GRSP funding, complete basic engineering/costing data for projects, prioritize the projects to be funded, and fund the approved projects according to the prioritization and limits of the GRSP budget. This refers to accomplishing today's training using improvements or replacement of existing training devices such as lifters, worn targets and replacement control computers that cannot be accomplished with existing operating and maintenance (O&M) budgets. The maintenance of "state of the art" range control systems also supports current training requirements. This is the area where GRSP will be most used.



Non-Live Fire MOUT/UWTC Facilities

The Non-Live Fire Military Operations in Urban Terrain (MOUT) / Urban Warfare Training Center (UWTC)

Facilities are training facilities based on extensive studies by the Marine Corps Warfighting Laboratory, which have shown that units trained to operate as an integrated combined arms team are more successful within the urban battle space and suffer fewer casualties. With this in mind and given the nature of operations in support of Operation Iraqi Freedom and the Global War On Terrorism, the requirement to train company and battalion sized forces is critical. Individuals and small units up to battalion size conduct foot, mobile, mechanized and/or armor patrols up to and through the site. Operations are conducted during both day and night.



The training facilities contains dispersed structures to support 360 degree training of fire and maneuver. The MOUT/UWTC Non-Live Fire Facilities is primarily used for company and battalion pre-deployment force-on-force fire and maneuver training using SESAMs ammunition and/or MILES gear within an urban terrain facility. Roads are of variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Non-Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA. Future fielding (3QFY06) will occur at MCB Camp Lejeune, with future plans for MCB Camp Pendleton, CA; MCB Quantico, VA; MCB Okinawa Japan; MCB Kanehoe Bay, Hawaii; MCAS Yuma and MWTC Bridgeport.

Live Fire MOUT/UWTC Facilities



The MOUT/UWTC Live Fire Facilities follow the same concept as the Non-Live Fire MOUT/UWTC facilities. The Live Fire facilities includes company live fire and maneuver training complexes and multi-vehicle convoy live fire and maneuver training complex. The complexes consist of 3 types of structures:

- 1) modular, nonpermanent, internally reconfigurable, breachable/seizable enclosed structures, live-fire capable internally/externally up to 7.62mm
- 2) modular, nonpermanent, empty, partially seizable, enclosed structures, live-fire capable internally/externally up to 7.62mm;
- 3) and nonpermanent, non-enterable 4-sided façade structures.

Individual and small units up to company size conduct foot, mobile, mechanized and/or armor patrols up to and through the two sites. Operations are conducted during both day and night. Individual, crew served and indirect fires are employed



with 5.56mm and 7.62mm ball ammunition used to fire at targets and structures within the MOUT area and larger weapon systems directed at targets in outlying areas. For example, a .50 cal may be fired at a target 1,000 meters from its position from within the MOUT while the Forward Air Controller (FAC) calls in a Cobra on a fleeing target 3km away. Fire and maneuver occurs along and between primary and secondary streets and access ways. The first two types of structures have capability to support and sustain fires at internally placed targets. Both training facilities contain dispersed structures to support 360 degree training of fire and maneuver. Roads are variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA. Future fielding of limited live fire facilities will occur at MCB Camp Lejeune in the 3rd quarter of FY06.

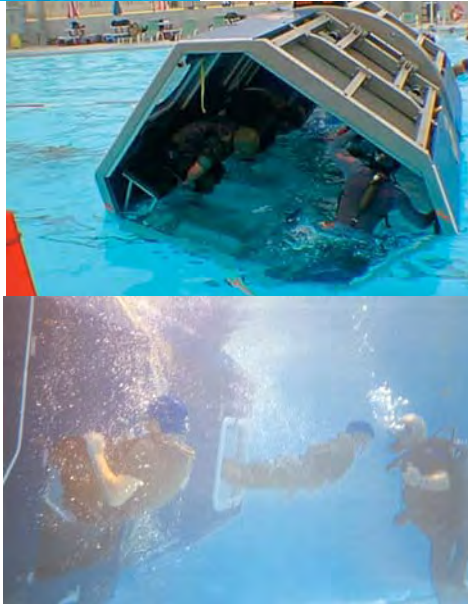


Modular Amphibious Egress Trainer (MAET)

MAET - provides egress training for non-aircrew flyers as



well as for other vehicle crews and passengers. MAET simulates underwater disorientation caused by rapidly sinking vehicles, aircraft or amphibious vehicles. With the use of modular panels, this system replicates aviation platforms such as, but not limited to, the CH-46, CH-53 and the MV-22, as well as other ground vehicles, such as the LAV-25, AAV and EFV.

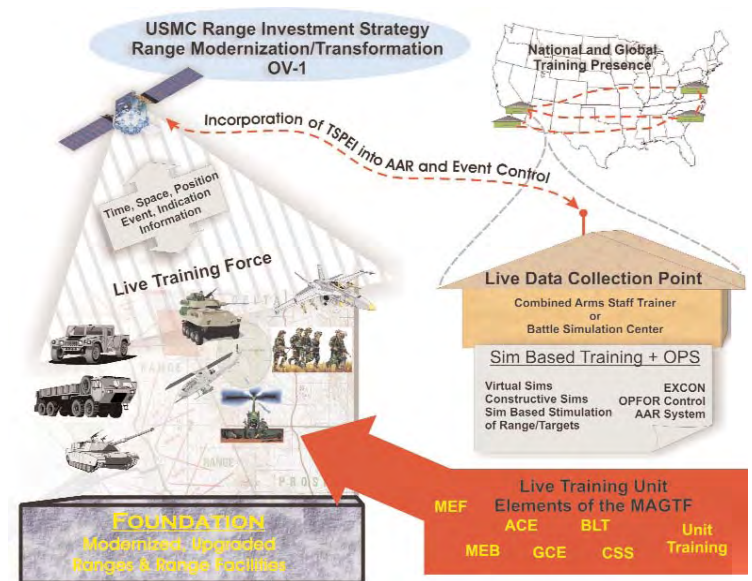


The trainer serves as a portion of an overall survival training program for non-aircrew "frequent flyers" that includes Shallow Water Egress Training (SWET) and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) familiarization and usage training.

The MAET is available at Marine Corps Base Hawaii, Camp Hansen - Okinawa, Japan, and Camp Pendleton, CA. Scheduled for future delivery to Camp LeJeune, NC.

Range Modernization and Transformation (RM/T)

The Range Modernization and Transformation (RM/T) program modernizes major USMC base and station live training ranges with a dynamic training system capable of real time and post mission battle tracking, data collection and the deliverance of value added After Action Review (AAR). Interface with installation command and control training centers (i.e. Battle Staff Training Facility, Combined Arms Staff Trainer, Battle Staff Simulation Center) is paramount to producing multiple scenario events that deliver relevant and realistic training. Integrating live and simulated training technologies, the fielded capabilities actively enhance live-fire, force-on-target, and force-on-force training through extensive after action review with ground truth feedback, realistic representation of opposing forces (OPFOR) and enhanced range and exercise control capabilities. Major system

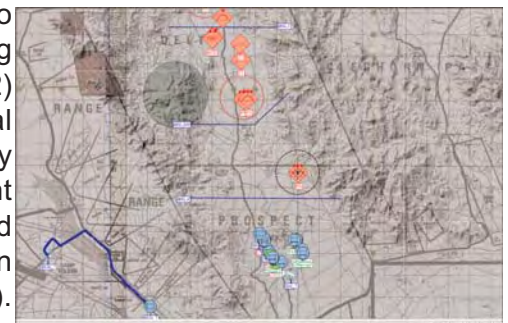


components of modernization include:

- Military Operations in Urban Terrain (MOUT) facilities
- Direct Fire Tactical Engagement Simulation System (TESS)
- Area Weapons Effects / Indirect Fire Tactical Engagement Simulation System
- Integrated Inter-active Targetry and Battlefield Effects Simulations (BES)
- Dismounted and Vehicle Tracking Instrumentation
- Aircraft Tracking Instrumentation
- Exercise Controller Instrumentation providing remote situational awareness display
- Tactical Voice Recording
- Tactical Data/C4ISR Interoperability (C2PC, DACT, FBCB2, BFT)
- Real Time 2D/3D Exercise Monitoring Capability
- Near Real Time Dynamic-Multimedia/Replay AAR Capabilities
- Take Home Output Packages
- Range Control Information Processing and Situational/Safety Awareness Displays
- Globally connectivity of USMC live training with distributed simulation and joint training through a common training-information architecture and local-connecting infrastructures

Range Modernization and Transformation links Marine Corps live training to the tenets of Training Transformation (T2)

- Joint National Training Capability (JNTC) and Joint Assessment and Evaluation Capability (JAEC).



Instrumentation allows Service and Joint virtual and constructive forces to interact with USMC live training forces from distributed locations. Eventually expanded to also incorporate coalition forces, MAGTF live training in open and urban terrain is enhanced by providing capabilities to conduct realistic training which exercises all battlefield operating systems, and by allowing continuous assessment of performance, interoperability, and identification of emerging requirements.



Sniper Towers

Sniper towers shall improve the existing firing points and increase the variety of urban “shot-types”. Improvements includes:

- 1) A multi-storied platform for ground-level and above ground level urban sniper scenarios and TTP proficiency
- 2) Eight (8) unique training compartments and roof-top firing position scenario variety
- 3) A training environment that allow sniper teams to conduct live fire training both into and out of the multi-storied compartmentalized façade with existing portable, remote operated targets and/or bullet traps (as necessary).

Multiple Integrated Laser Engagement System - 2000 (MILES-2000)

MILES 2000 is a training system that provides a realistic battlefield environment for Marines involved in training exercises. MILES-2000 provides a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. Each individual and vehicle in the training exercise has a detection system to sense hits and perform casualty assessment. Laser transmitters are attached to each individual and vehicle weapon system and accurately replicate actual ranges and



lethality of the specific weapon systems. MILES-2000 is designed for use by MAGTF as a force-on-force engagement simulation training system.

Precision Gunnery Training Systems (PGTS)

PGTS is used to teach precision gunnery skills to TOW gunners in the field. This training can occur at designated ranges, general outdoor areas, or representative tactical environments. This system can be used for both initial gunner familiarization in an outdoor environment as well as for gunner skill enhancement and progression.

Remote Engagement Targets (RETS)

RETS is a computer-controlled automated system of weather resistant stationary pop-up and moving targets for infantry, armor, and anti-armor training. The system offers computer-driven programmed tactical scenarios or it can be operated in a manual mode with group or individual targets raised on command. The number of scenarios is limited only by the quantity and type of targets and the imagination of the users. There are several different configurations of the system and several variations within each configuration. RETS Ranges have been installed at various locations within the Marine Corps and will support Fleet Marine Force (FMF) and base units live-fire training requirements for all ground direct fire weapons to include combat vehicles employing field-firing techniques. RETS significantly enhances the capability to train individual Marines, crew-served weapons teams, small units, and combat vehicle crews in the employment of their weapons systems under the most realistic combat conditions possible.

Special Effects Small Arms Marking System (SESAMS)

SESAMS is a user-installed weapons modification kit that



allows the individual Marine to fire, at short range, a low velocity marking ammunition while precluding the weapon from firing live ammunition. SESAMS provides instantaneous feedback during force-on-force close quarter battle scenarios. This immediate visual and sensory feedback to the shooter and target without firing live ball ammunition reduces risk to participants and significantly reduces the maintenance costs to shooting houses. SESAMS is employed with current and projected standard and non-standard Marine Corps small arms. SESAMS conversion kits convert current and future small



arms to fire low velocity marking ammunition by replacing the barrel, upper receiver, and or bolt. A SESAMS converted weapon has distinct identifiable markings to enable identification under both normal and reduced-visibility conditions.

Tank Weapons Gunnery Simulation System / Precision Gunnery System (TWGSS/PGS)

TWGSS/PGS is an appended, laser-based, precision gunnery and tactical engagement simulation trainer. The TWGSS is the model integrated on the M1A1 tank to simulate the main gun and the coaxial



machine gun. The PGS is integrated on the Light Armored Vehicle (LAV) to simulate the 25mm main gun, coaxial machine gun and TOW missile. The TWGSS/PGS allows on-vehicle precision gunnery without the expenditure of actual ammunition. Both TWGSS/PGS are fully integrated with the vehicle fire control system requiring the crew member to perform gunnery functions; lead, super-elevation, and lase, exactly as they would in combat. The TWGSS/PGS provide visual tracers, burst, and obscuration through the vehicle sights. All event data are recorded for display on a notebook computer for after action review.





Virtual Training Systems Development



Ms. Annette Pike

Assistant Program Manager for
Virtual Training Systems Development

Listed below are the programs under development by the Virtual Training System Development APM at PM TRASYS.

Combat Vehicle Training System (CVTS)



CVTS provides the Marine Corps the ability to train M1A1, LAV-25, and AAV crew members to the approved standards of combat skills and

readiness. The end state system will be a high fidelity networked training system supporting individual, collective (crew, section, and platoon), combined arms, and joint training scenarios. CVTS will support gunnery proficiency, weapons platform familiarization, and tactical training. CVTS will provide a measurable improvement in individual, crew,

and unit level tactical proficiency levels for tank, light armored reconnaissance and assault amphibian battalions. The system will train target acquisition, identification, and engagement with the weapons appropriate for each platform.

The CVTS project will provide a computer generated battlefield to include targets, target signatures, and weapon effects. Aural cues presented to the crews will consist of realistic environmental, platform, and weapon sounds. An instructor/operator will be able to control exercise selection, observe crew member actions, and conduct after-action reviews with the crews.

The CVTS - M1A1 are fielded land-based training systems. The CVTS - M1A1 also has a requirement for a deployable training application and is under contract for delivery in second quarter 2007. The CVTS - LAV has a requirement for land-based and deployable training applications. The land-based and deployable configurations are under contract for delivery in second quarter 2006 and fourth quarter 2006 respectively. The CVTS-AAV is under contract for land-based training systems with delivery in second quarter 2006.

Expeditionary Fighting Vehicle (EFV) Training System Program

The overall objectives for the EFV training system program is to design, test, field, and support the various training resources necessary to adequately train new EFV crews and veteran AAV Marines in the operations and maintenance of the EFV at the Assault Amphibian School (AAS) in Camp Pendleton, CA and Reserve Forces. The specific training tasks include vehicle familiarization and operations, primary and secondary weapon system gunnery techniques, communication and navigation, and command and control operations. The EFV training system consists of the following training devices:

1. Driver Simulator (15 systems)
2. Turret Simulator (10 systems)
3. Maintenance Trainers (4 part task trainers)
 - 1 electrical system maintenance part task trainer
 - 1 weapon system maintenance part task trainer integrated w/GFE turret
 - 1 set of maintenance skill trainers
 - 1 engine maintenance component trainer
4. Communication and Navigation Laboratory (2 labs)
 - 1 EFV (C) communications and navigation part task trainer
 - 1 EFV (P) communications and navigation part task trainer
5. Automated Electronic Classrooms (8 classrooms)





These training devices will use a high-fidelity training approach that replicates the actual EFV system performance characteristics and man-machine

interfaces. The objective is to facilitate and enhance the student's transfer of training in both familiarization and skills proficiency. These training devices are to provide a method for measuring the level of student achievement concerning academic, hands-on skills training and retention.

Improved Moving Target Simulator (IMTS)

IMTS is a Short Range Air Defense (SHORAD) weapons training system. The upgraded IMTS is a weapons proficiency trainer that provides computer-generated aircraft and computer-generated



background images in a 360-degree dome. Real time weapon interface and student action monitoring are provided during scenario execution.

This system provides the Stinger gunner the opportunity to maintain proficiency for successful operation of the Stinger Manportable Air Defense System (MANPADS) using the latest technology. The training provided allows for three Stinger gunners to train simultaneously using proper techniques and skills to identify, acquire, track and launch Stinger missiles. The upgrade will provide for more realistic feedback and better video resolution.

This system will provide the Stinger gunner and his team Leader the opportunity to work on individual tracking skills, the proper acquiring methods and the gunner's ability to properly launch his missile. The upgraded system allows the Stinger Section Leader to train with three teams at once resulting in improved training of the entire section.

The Section Leader will have the opportunity to interject malfunctions into the scenario that will cause the gunner to apply immediate action, or make a split-timing decision, thus providing a better trained SHORAD for the Marine Corps.

Indoor Simulated Marksmanship Trainer - Enhanced (ISMT-E)

ISMT-E is an interactive audio/video weapons simulator that provides marksmanship training, weapons employment training, and tactical decision-making training for a variety of small



arms. The training system consists of infantry weapons that are instrumented with lasers which enable Marines to simulate engaging numerous target types in lanes, video, and CGI scenarios. The scenarios replicate range firing for qualification on basic infantry weapons, tactical weapons employment training, and shoot/no- shoot scenarios.

The ISMT provides training for up to four shooters per system. An Infantry Squad Trainer (IST) links 3 ISMTs together and provides training for up to 12 shooters in a squad. The ISMT-E upgrade supports up to five firing positions per system and 15 Marines per IST. The ISMT trainer uses video discs and lanes imagery to train marksmanship skills. The ISMT-E portrays video scenarios with DVD, utilizes lanes imagery for marksmanship training, and has the flexibility for Marines to author CGI scenarios for tactical employment training. Both configurations, the ISMT and ISMT-E, replicate marksmanship qualification ranges and judgmental shoot/no-shoot situations. Both configurations also have a computer-based instructor control station which allows the operator to select and control all training while providing comprehensive diagnostic, replay, feedback, and scoring capabilities. The ISMT-E/IST can also provide forward observer, forward air controller, and indirect fire training. Other system capabilities include scenario development, target authoring, video branching, and night vision device training. The ISMT-E will be permanently installed on board the LPD-17. ISMTs are fielded across the Marine Corps at formal schools, infantry regiments, the Wing, MSG, Security Forces, and Reserve locations.

Indoor Simulated Marksmanship Trainer- Marine Security Guard (ISMT-MSG)

The ISMT-MSG will provide MSG Detachments around the world a non-live fire training system, in order to sustain and maintain marksmanship, weapons handling, and



support training deadly force application decision-making skills. The system will consist of simulated weapons instrumented to enable engagements in various video and computer-generated scenarios relevant to real world warfare situations. The system will be used indoors within permanent training rooms as well as in operating office spaces within Embassies, Consulates and Bachelor Enlisted Quarters worldwide. It will be a man portable, user-friendly, digital-based, interactive system, that realistically replicates the firing capabilities of small arms weapons, in a variety of environments and target array options. This system will support training MSG marksmanship skills with the M9 service pistol, the M16A4/M4A1 service rifle, and the M870 Remington (military) Shotgun. The system will also provide USMC and State Department qualification courses of fire, field firing, and judgmental shooting situations.

Medium Tactical Vehicle Replacement - Training System (MTVR-TS)



The current MTVR-TS contracting effort is designed to upgrade and standardize the courseware now used in the electronic classrooms (EC) at Camp Johnson, NC and Fort Leonard Wood, NC. As part of this project, Web- and CD-based courses will also be created to provide "classroom" training on the MTVR and HMMWV to Incidental Motor Vehicle Operator (IMVO) candidates. Completion of this project is scheduled for 2nd quarter FY06.

Medium Tactical Vehicle Replacement - Operator Driving Simulator (MTVR-ODS)



The Marine Forces Reserve (MFR) is procuring Medium Tactical Vehicle Replacement (MTVR) Operator Driving Simulators for training vehicle operators at east and west coast MFR training sites. The trainers will utilize a manufactured cab with an MTVR specific dash set, three degrees of freedom seat motion for the driver, and 180 degrees visual display. The trainers will be installed at Las Vegas, NV and Red Bank, NJ. The Las Vegas trainer will be

a permanent installation into existing facilities and the Red Bank trainer will be trailer mounted mobile system. The Operator Driving Simulators will be fielded 2nd quarter 2006.

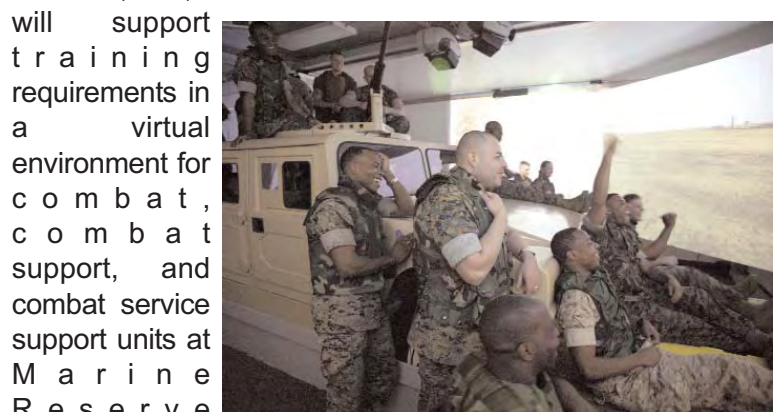
Virtual Combat Convoy Trainer – Marine (VCCT-M)



The Virtual Combat Convoy Trainer - Marine is a mobile, self-contained and self-supporting trailer to train Marines and tactical leaders. This training system enables convoy elements and crews to train repetitively, safely, and efficiently in a realistic manner aboard a mock-up vehicle using simulated weapons systems, eliminating the requirement for



actual vehicles, weapons, ammunition, communication gear, batteries, fuel, and tactical maintenance items. A VCCT-M will support



training requirements in a virtual environment for combat, combat support, and combat service support units at Marine Reserve Training Centers (RTC). The Commander Marine Forces Reserve (CMFR) procured one VCCT-M suite (4 trailers) that is currently operating at Camp Wilson, 29 Palms, CA. CMFR





will take delivery of a VCCT-M half suite (2 trailers) first quarter 2006 with the intent of co-locating it with a RTC in the mid-Atlantic region in order to support Reserve Component training.



Constructive Training Systems Development



LtCol Gregory Caldwell

Assistant Program Manager for
Constructive Training Systems Development

Mission: To develop, procure and field Constructive Training Systems.

Vision: Effectively and efficiently develop, procure and field Constructive Training Systems that satisfy approved Marine Corps training requirements and are capable of supporting Interoperability and Joint level training.

Programs:

Combined Arms Command & Control Training Upgrade System (CACCTUS)



The CACCTUS project will provide interoperability between the CAST trainer and other Marine Corps Air and Ground Training devices. It will provide fire-support training for the MAGTF elements up to and including the MEB level. CACCTUS will upgrade the existing CAST training systems and provide enhanced 2D and 3D visualization of the battlespace, scenario development based upon training objectives and an after action review capability that

depicts specific events that can be used as teaching points for improvement of team skills. The upgrade will incorporate command and control systems and a reconfigurable communications capability. All five CAST-training systems will be integrated through a common network architecture and will provide the ability to accomplish distributed training. The CAST training system will be capable of integration with other Marine Corps Air and Ground Training systems in order to provide fire support training for the MAGTF elements up to and including the MEB level.

The CACCTUS Program began as an Advanced Concepts Technology Demonstration (ACTD) initiative in FY00 with a goal to demonstrate training enhancements afforded by current modeling and simulation (M&S) technologies. A prototype system was defined, developed, and installed at the Twentynine Palms, CA CAST facility in FY03 for user evaluation and feedback in an ongoing spiral development process.

The lessons learned are being used to further refine requirements and incorporate future systems to build the foundation for the Combined Arms Command and Control Trainer Upgrade System (CACCTUS) program that will be deployed to all five USMC CAST facilities: MAGTFTC, Twentynine Palms, California; Marine Corps Base Hawaii (MCBH) Kaneohe Bay, Hawaii; Camp LeJeune, North Carolina; Camp Pendleton, California; and Camp Butler, Okinawa.

CACCTUS is envisioned as a pivotal component in USMC M&S offerings and provides the overarching architecture to support live, virtual, and constructive (L-V-C) training and interoperability with existing and emerging USMC training. Demonstration of the CACCTUS (L-V-C) system is to be completed to meet Full Operational Capability (FOC) in FY09. CACCTUS will also serve as the USMC component of the Joint National Training Center (JNTC) to be completed to meet FOC in FY11.



Deployable Virtual Training Environment (DVTE)



DVTE is a first person skills sustainment trainer that trains Marines by using a simulation network with reconfigurable workstations capable of emulating a variety of weapon systems. Individuals select the weapon, vehicle, or leadership billet desired, then join a virtual battle space where other live players and synthetic forces are engaged in virtual operations.

Individual MAGTF skills can be trained in this virtual environment using a semi-autonomous force model as its basis. The project responds to the need for a flexible, deployable, training system that provides combined arms, MAGTF and Naval Integration training.

Currently a prototype desktop training network, the DVTE addresses a significant subset of USMC combined arms training. DVTE provides a custom-built standalone Combined Arms Network (CAN) covering most USMC ground and air weapon systems, and is a USMC critical capability for providing interoperability with other JNTC participants. This interoperability will also enable distributed interactive unit training for widely separated units.

DVTE also serves as a platform for delivering individual and team training simulations, including the USMC Tactical Decision-making Simulations (TDSs). These TDS tools provide staff training for command and control, fire support coordination, and staff team interaction. For unit training the TDS tools provide combined arms training, small unit tactics, and teamwork skills. Team training tools provide for fire team tactics, teamwork and leadership skills, as well as tools to develop individual decision making skills.

MAGTF Tactical Warfare Simulator (MTWS)



MTWS is the Marine Corps advanced tactical combat simulation designed as a decision support system in real and constructive environments to augment Marine Corps Command and Control systems. MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation with stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. The system supports tactical decision-making, and evaluation; operational planning and evaluation; and global war gaming.

The system is also capable of integrating with other service models of the Joint Training Confederation (JTC) through the Aggregate Level Simulation Protocol (ALSP). MTWS can operate in Live and Constructive training environments.

MTWS is available at the following locations: Marine Corps Bases Camp Lejeune, NC; Camp Smedley D. Butler, Okinawa, Japan; Camp Pendleton, CA; Quantico, VA; and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



Advanced Distributed Learning



Ms. Anne Sullivan

Assistant Program Manager for
Advanced Distributed Learning

ADVANCED DISTRIBUTED LEARNING

The Advanced Distributed Learning (ADL) initiative began within the Department of Defense (DoD) as a strategy to modernize training and education. This strategy was developed in response to the 1997 Quadrennial Defense Review (QDR). The intent of the strategy was to provide DoD personnel access to training and education that was tailored to their individual needs and to deliver this training whenever and wherever it was needed in an efficient, effective and affordable manner through the use of technology.

Executive Order 13111, which was signed in January 1999, tasked DoD to lead the development of common specifications and standards for technology-based learning in both the federal and private sectors. Shortly thereafter, the initial draft of the Sharable Content Object Reference Model (SCORM®) was developed. SCORM® incorporates emerging standards and specifications into one common reference model for use by both sectors. The current version of this standard is SCORM® 2004.

In 1999, DoD created a Strategic Plan to guide distributed learning initiatives. DoD also established the ADL Co-Lab at the Institute for Defense Analysis (IDA) to foster collaborative research and development, evaluate common tools and develop standards and guidelines for the ADL initiative. Since then, other co-labs, partnership labs, and ADL centers have been established to create an ADL Co-Lab Network. In May 2000, the ADL Implementation Plan was developed to provide a framework for the federal government on implementing the strategic plan.

ADL is implemented within the Marine Corps through the Distance Learning Program (MCDL) also known as MarineNet. This is the USMC-wide, E-learning Infrastructure that enables Marines to receive training via the appropriate interactive media, when and where the learning is needed. DL provides a greater population of Marines access to learning resources and performance support tools and increases the effectiveness of training and education through the use of technology and improves operational readiness.

MCDL is an Acquisition Category III Information Technology (ACAT III-IT) program that is co-managed by PM TRASYS and the Training and Education Command (TECOM) College of Continuing Education (CCE). PM TRASYS is responsible for the procurement, integration, installation and life-cycle support of the system while CCE is responsible for providing the requirements, standardization of ADL within the Marine Corps IAW ADL standards and the development of content to run on MarineNet. The program also provides information on ADL standards in general as well as specific information and guidance to include a style guide and technical specification to other Marine Corps Systems Command Project Managers who are developing DL products to be hosted on MarineNet.

The Marine Corps collaborates with other services and DoD organizations through its participation in numerous forums. One of those forums is the Joint ADL Co-Lab in Orlando. Part of their mission is to assist the services in resolving problems in implementing ADL. The PM for Training Systems serves as a member of the Board of Directors and the DL Project Officer serves as the Associate Director for the Marine Corps.

Additional information on Marine Corps Distance Learning can be found at www.marinenet.usmc.mil.

Additional information of ADL can be found at www.adlnet.org.

Distance Learning (DL)

Distance Learning is the USMC E-Learning Infrastructure that enables Marines to receive training and education via the appropriate interactive media, when and where the learning is needed. DL provides access to learning resources and performance support tools to a greater population of Marines. DL increases the effectiveness of training and education through use of technology. DL contributes to the Marine Corps' operational readiness by providing all Marines with access to military occupational specialty (MOS) and common skills training opportunities and Professional Military Education (PME). DL capabilities fill critical gaps in the training and education continuum and can reduce the amount of time Marines are required to be away from their home duty station attending formal





provider. The Distance Learning program has more than 1500 courses available. 300 of these courses are Marine Corps developed. For access to this Distance Learning capability, go to: www.marinenet.usmc.mil.

training. DL gives the commander a better-trained Marine while increasing personnel availability to accomplish the unit's mission.

The Distance Learning program consists of commercial-off-the-shelf (COTS) hardware and software that is that runs on the Navy/Marine Corps Intranet (NMCI)/Marine Corps Enterprise Network (MCEN). Various Distance Learning suites have been fielded to major Marine Corps bases and stations.

Distance Learning suites are as follows:

- Content Delivery Engines (CDE) (Network Appliances that host content)
- Centralized Learning Management System (LMS) for Student Administration
- Learning Resource Centers (LRC)
- Video Teletraining Training (VTT) Centers
- Deployable Learning Resource Centers (DLRC).

Learning Resource Centers are located at Marine Corps bases, stations and detachments worldwide. Locations include Camp Pendleton, Camp Lejeune, Quantico, Okinawa, Iwakuni, Hawaii, MCRD San Diego and MARFORRES.

Content Delivery Engines serve content to both the Learning Resource Centers as well as local base desktop users.

Deployable Learning Resource Centers are located at Camp Lejeune, Camp Pendleton, Okinawa, MARFORRES and 29 Palms for use when deployed aboard ship or in a tactical environment. An Internet site provides access to Marines from their homes via their Internet service



Instructional Systems Development



Mr. Bill Franklin

Assistant Program Manager for
Instructional Systems Development

Mission: To provide manpower analyses and training analyses support to Marine Corps organizations as requested.

The Instructional Systems Development section was instrumental in the development and implementation of the MCSC Manpower and Training Process, a functional process under the Acquisition Logistics Core Processes that provides Manpower and Training Analyses and Manpower and Training Plans (MTP) for Marine Corps Systems Command (MCSC) acquisition programs.

The Instructional Systems Development section has developed a MTP outline that provides the general content and format for a MTP. Each plan has its own distinct attributes so no two plans are identical. PM TRASYS has also developed a Manpower and Training Manual that describes the systematic process necessary to provide the best possible manpower and training recommendations to support the new acquisition or allow examination of alternative system concepts early in the Weapon System Acquisition Process (WSAP). The processes described in this manual should be applied as early as possible in the acquisition process and be continually refined as information matures and changes occur.

Functions and Capabilities:

Manpower and Training Analysis (MTA) - A MTA ensures manpower and training considerations are integrated into the design effort of equipment, systems, and subsystems in order to improve total system performance and reduce costs of ownership by focusing attention on the capabilities and limitations of the Marine. A MTA also provides recommendations for the types and quantity of Marines,

civilians and contractors required to operate and maintain a given weapon system as well as recommended training required for the Marines, civilian and contractors so they can properly operate and maintain that system. The results of the analysis are documented in a MTP. A MTA is required by the MCSC Manpower and Training Process, which was approved by the MCSC Steering Team on 19 Dec 2002.

Training Situation Analysis (TSA) - A TSA is the systematic investigation of a training need or problem. TSAs verify the efficiency of a training system to meet existing training needs and to survey training programs and technologies for applicability to new training needs. A TSA determines whether a training requirement exists, defines the nature of the requirement, documents the existing training program, describes potential solutions, and presents a plan to implement the training solutions with applicable life cycle resource data. The results of the TSA are documented in a Training Situation Document.

Job Task Analysis (JTA) - A JTA is used to obtain a detailed listing of tasks necessary to perform a specific job or duty. Job related data should include its purpose, functional responsibility of personnel, required support equipment and materials, and information on how the system works, is maintained, or is used. Collecting this data involves observing personnel in the work environment, interviewing job incumbents and supervisors, questionnaire surveys, and the study of applicable occupational field descriptions and related training documents.

Training System Functional Description (TSFD) - The TSFD defines the basic physical and functional baseline requirements of a training device as one component of a total training system. It describes how the training device will be developed in accordance with known constraints of cost, producibility, and supportability. The TSFD is used by training systems engineers to develop a specification for a training device. The TSFD should include information about the facilities and other logistics elements necessary to support the training device.

Current Initiatives

The Instructional Systems Development section is conducting numerous MTAs, JTAs, and TSAs for MCSC, MCCDC and TECOM.

The Instructional Systems Development section has developed a new user interface strategy and design for the Statement of Work, Contract Data Requirements List (CDRL) and Tracking Tool (SCATT) and is actively working with the SCATT Project Officer to implement this strategy.

The Instructional Systems Development section is involved



with the Defense Training Standards Working Group (DTWSG). This forum is the formal body for developing and maintaining performance specifications and guidance documents for use in acquisition and development of education and training programs throughout the Department of Defense.

The Instructional Systems Development section is actively involved with the Navy's effort to update its Navy Training System Plan Processes.

The Instructional Systems Development section developed a Manpower and Training Process Certification Course for MCSC Logisticians and are currently conducting that training at Quantico and Albany.

The Instructional Systems Development section works closely with MCCDC Total Force Structure Division, TECOM and MCSC ACLOG to refine and improve the MCSC Manpower and Training Process.



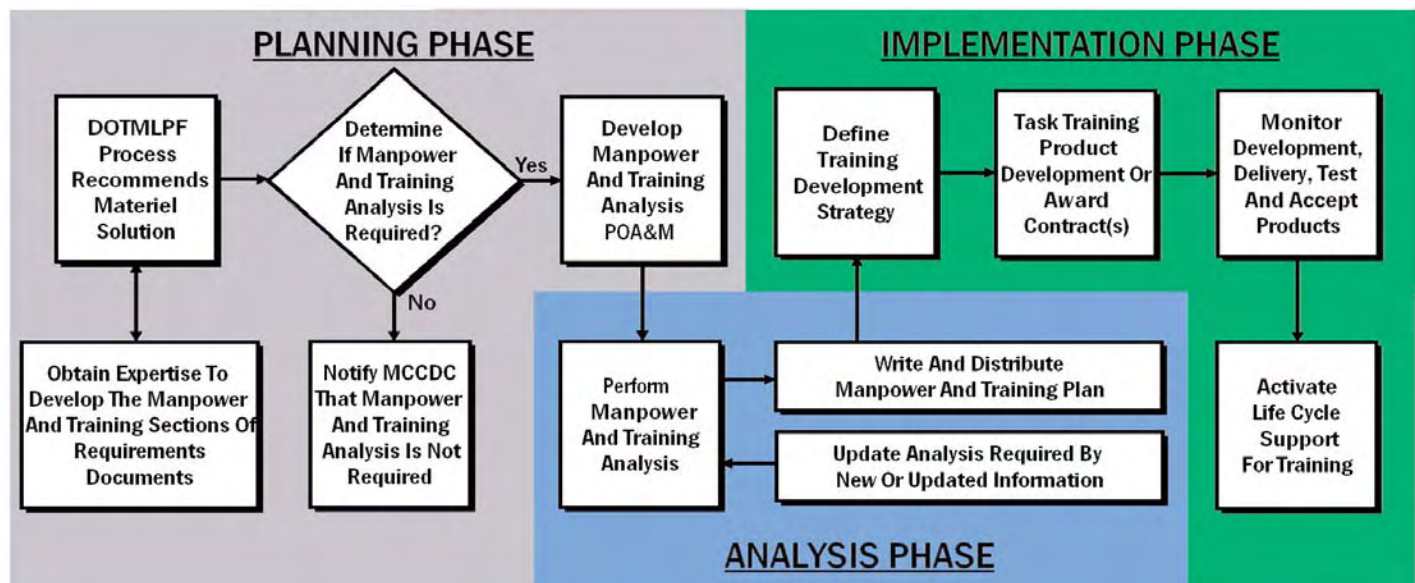
Marine Corps Systems Command Manpower and Training Process

The Marine Corps Systems Command (MCSC) Manpower and Training (M&T) Process was approved on 19 December 2002. It is a sub-process under the Acquisition Logistics Core Process. The M&T Process aligns with and supports the core process. The M&T Process outlines planning, analysis and implementation procedures for defining manpower requirements and providing training solutions for systems acquired by MCSC. The M&T Process is mandatory for all MCSC acquisition and product improvement programs. It is the responsibility of the program logistician to execute the process through a M&T Integrated Product Team in coordination with other agencies and commands; and especially with MCCDC Training and Education Command and Total Force

Structure Division. The Assistant Commander for Acquisition Logistics is the process owner, and PM TRASYS is the process implementation manager. The graphic below shows the major steps of the process and the graphic on the following page shows the relationship of the M&T Process to the Principle End Item Development and the desired results of these combined efforts. Detailed information about the process is available electronically through the MCSC TIGER Acquisition Logistics Knowledge Center or the PM TRASYS Web site (www.marcorsyscom.usmc.mil, select "TRASYS").

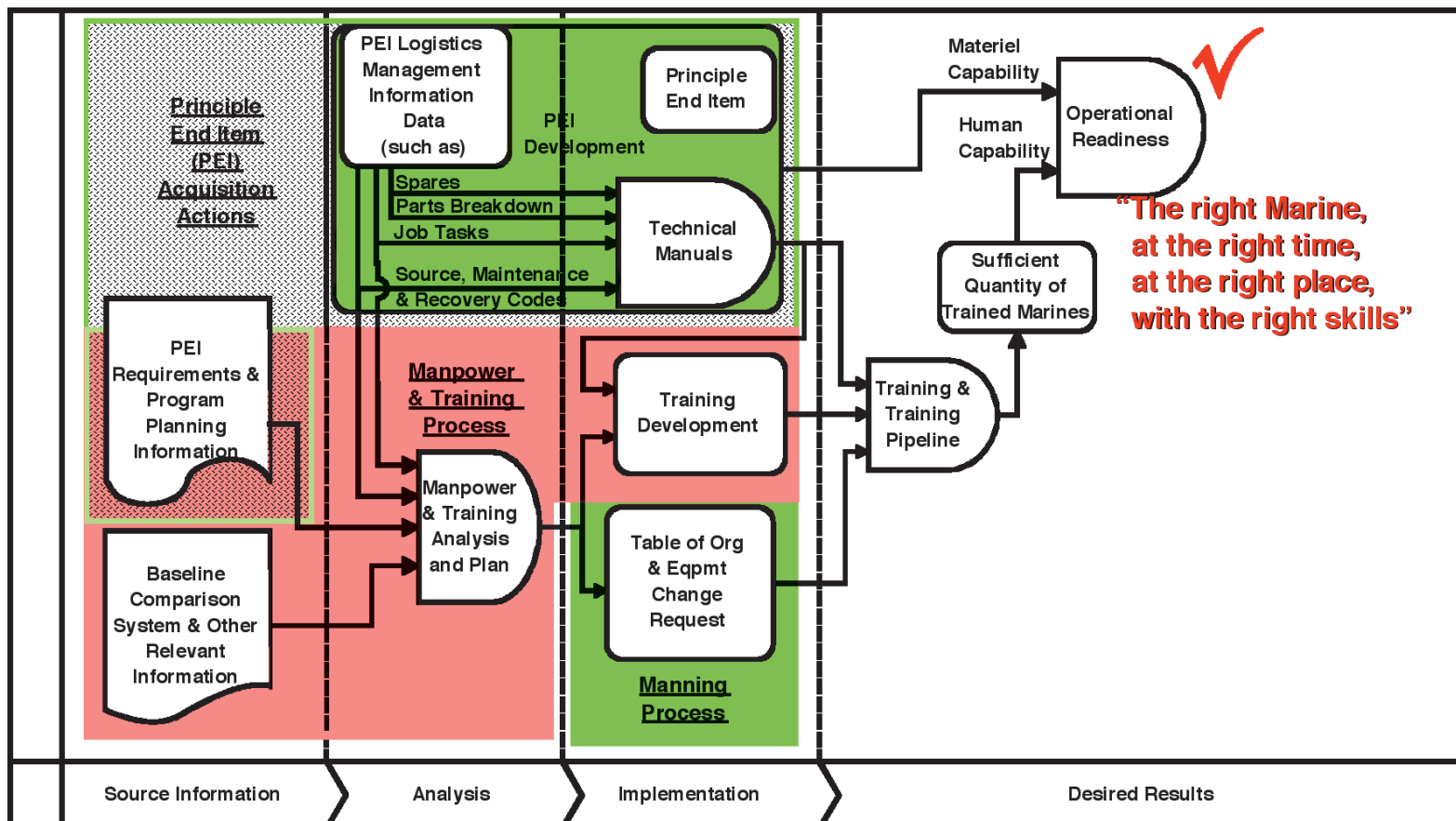
The Manpower and Training Process is too detailed to include herein. Below is a macro-level chart depicting the major components that describe the process. For the entire process, contact PM TRASYS.

Manpower and Training Process (Macro Level)



The graphic below illustrates the linkage of the Manpower and Training Process within the Principle End Item Development and the Manning process. Ultimately these three processes provide the synergism to optimize operational readiness.

How the Manpower and Training Process fits with Weapon System Development
and the MCCDC Total Force Structure Manning Process
(Macro Level)



Training Operations Support



Maj Stuart Muladore

Assistant Program Manager for
Training Operations Support

Mission: Provide comprehensive and integrated oversight of all logistics management activities associated with the acquisition and sustainment of Marine Corps ground training systems.

There are two primary focal points of the TOS team; analysis and recommendation on best business practices for acquisition logistics support, in other words getting the product through the Deployment phase of the Acquisition Life Cycle Management framework, and supporting the product and the Marines using it once it reaches the Operations and Support phase of the Acquisition Life Cycle Management framework.

Training System Acquisition Logistics Support

TOS manages the integration aspects of support for ground training systems and equipment using the MCSC Equipping Process.

Throughout the systems development process, TOS provides integrated logistics support to properly influence the system design for cost-effective supportability that meet the needs of the Marine Corps training community. Emphasis is focused on strategically implementing these support considerations early and throughout the acquisition processes.

Minor Training Devices

Starting in FY06, TOS will assume the acquisition support responsibility for the Minor Training Device (MTD) program. The MTD program is an annual reoccurring TECOM initiative that allows Marine Corps units to request training devices or aids that are normally of intrinsically small cost, thus not covered under other POM initiatives, or are viewed as consumable items. The call for candidates

is normally addressed through a MARADMIN and has historically been released in the August/September timeframe. The objective in FY06 and in subsequent out years will be to release the MARADMIN in the 3rd Fiscal Quarter with candidate nominations due by August. This will allow for possible capture of end of the FY funds and also allow for immediate execution at the start of the new FY.

Examples of the FY05 approved submissions included:

- Rubber and Plastic Weapons (M16A2, AK47, Knives, RPG7)
- CPR Manikin
- 60/81mm Training Rounds
- Casualty Simulation Kits

Once TOS receives the prioritized list from TECOM, coordination regarding shipping destinations and points of contact will be conducted concurrent with the purchases.

Units are responsible for the support and upkeep of MTDs. Replenishment or replacement outside of the annual TECOM funded initiative is a unit responsibility.

MAGTF Training Systems Support (MTSS)

MTSS effort encompasses training support in the areas of command and control systems and supporting C4I applications, technical simulation support services, I/T Instruction and Support Services for MSTP, each of the MEFs, the MAGTF Training Command located in 29 Palms, and MARFORPAC.

This program includes but it not limited to providing support services for training activities employing current fielded modeling and simulation systems, the operation of designated information systems (and follow on versions thereof), development of supporting training documentation, and the need for contractor personnel conversant in training support technology. In addition, this program provides the ability to evaluate emergent training support technologies. The supported training audience encompasses Marine Corps unit commanders and their staffs, the Marine Corps education establishment, Marines under training, developers of training systems, conceptual experimenters, and future evolving activities supporting the Marine Corps.

Training Systems Sustainment Support

Throughout the operations and support phase of the training system life cycle, TOS manages an array of Government and Contractor programs that provide operation, maintenance, and modifications/upgrades to fielded training systems and live fire ranges world-wide. The primary objective of this phase is to maximize performance and availability of fielded systems and



support equipment, examples of these support programs include:

- In-Service Engineering Offices (ISEO)
- Contractor Operation and Maintenance Services (COMS)
- Contractor Logistics Support (CLS)
- Contractor Maintenance Support (CMS)
- Contractor Field Services (CFS)
- Contractor Supplied Instructions (CSI)
- Instructional Systems Support (ISS)
- Warranty
- Other Service's Support

In-Service Engineering Offices (ISEO)

In-Service Engineers are another cost-effective means of life cycle sustainment, configuration management, and engineering services for fielded training systems on-site. TOS coordinates the staffing and management of ISEOs located at major Marine Corps installations, enabling a direct line of frequent communications with our training system customers, stakeholders and commercial support contractors.

Capabilities include:

- Technical liaison with commands that possess training systems
- Development and installation of quick-response or emergency modifications to training systems
- Assistance with engineering analysis, feasibility studies, and Cost & Lead-Time Estimates (C<E's) for proposed training system change requests.
- Process Training Equipment Change Requests (TECRs) and prepare Training Equipment Change Directives (TECDs) for training systems hardware, software, and documentation modifications.
- Assist with Training Situation Analyses (TSA), Manpower and Training Analyses, and Facilities Analyses,
- Assist project engineers and integrated project teams with development and acceptance of training systems.
- Assist installations with the disposal of training systems.

There are In-Service Engineering Offices located at the following Marine Corps installations:

- Marine Corps Base Camp Lejeune, NC
- Marine Corps Service Support Schools, Camp Johnson, NC
- Marine Corps Base Camp Pendleton
- Marine Air Ground Task Force Training Center, 29

Palms, CA

- Marine Corps Base, Hawaii
- Marine Corps Base, Camp Butler, Okinawa Japan

Training Information Electronic Resource System (TIERS)

TIERS is a robust, integrated logistics management system specifically tailored to support the needs of the Marine Corps training system community through a collaborative effort between PM TRASYS, NAVAIR Orlando and commercial industry participants.

TIERS is a one-stop electronic portal that serves as a repository for lifecycle support data and dissemination of technical data, references, and resource information essential in the research, design, development, production, operation and sustainment phases of the training systems and their associated support equipment and facilities.

The system is designed to serve as PM TRASYS centralized source of integrated logistics and configuration management data. It eliminates the need of our customers to learn how to access or request data from several divergent, cumbersome groups of databases to get a full integrated landscape of a particular training system. TIERS offers an efficient and effective process for fulfilling data needs, and can provide customized data in a quick and hassle-free way.

One of the key capabilities of TIERS is the ability for the PM TRASYS customer to submit a Training Equipment Change Request (TECR). A TECR is a form that a customer can submit to request a change, improvement, complaint, basically relay information to PM TRASYS regarding a ground training system.

Unlike paper trails that require non-value added levels of endorsement and can take months to work their way through the system, the TECR is immediately dispersed to the appropriate individual in PM TRASYS for initial action.

One of the primary values of the TECR is its role in developing the budget. When a TECR is submitted requesting a change to an existing training system, more often than not it is to make an improvement to the system. Although improvements are sometimes relatively inexpensive, the likelihood of the improvement requiring new or additional funding is significant. Through the capture and compilation of all submitted TECRs, TOS can consolidate and forward the roll up to TECOM for consideration during the next appropriate budget exercise (mid-year review, POM build, mini-POM build, etc.).

TIERS Access. TIERS is accessible via the PM TRASYS website. Go to www.marcorsyscom.usmc.mil, select "TRASYS", and then select "TIERS".

TIERS Access Requests. TIERS is a secure password protected web portal. Access requests should be submitted at the TIERS web portal front page.



Training Technology Development



Mr. Martin Bushika

Assistant Program Manager for
Training Technology Development

Mission: To develop and transition valued technologies to Marine Corps ground training.

Sponsors and Partners: Office of Naval Research (ONR) (Expeditionary Warfare Division), Headquarters Marine Corps (Manpower and Reserve Affairs), Joint Advanced Distributed Learning Co-Laboratory, Training and Education Command (TECOM) (Technical Division), Marine Corps Warfighting Lab (MCWL), Marine Corps Reserve Force (MARFORES), Defense Advanced Research Projects Agency (DARPA) and US Special Operations Command (USSOCOM). Together, ONR, TECOM, MCWL, and PM TRASYS form the Marine Corps Ground Training Systems Consortium.

Program Thrusts:

- Tactical decision-making simulation technology
- Synthetic environment technology
- Language and culture training technology

General:

As the ONR and USSOCOM-sponsored Technology Development Agent (TDA), PM TRASYS Training Technology Development (TTD) Division develops and then transitions technologies to USMC ground training systems. The TTD Division works very closely with ONR, the Technology Developer; with TECOM, the Requirements Developer; with PM TRASYS, the Material Developer; with MCWL; and with the Marine Forces (MARFOR) to develop those technologies that provide the greatest benefit for Marine Corps ground training systems.

PM TRASYS TTD conducts both Applied Research (6.2)

and Advanced Technology Development (6.3). Applied research is a systematic study to understand the means to meet a recognized and specific need. It is a systematic expansion and application of knowledge to develop useful materials, devices, and systems or methods. It may be oriented, ultimately, toward the design, development, and improvement of prototypes and new processes to meet general mission area requirements. Advanced Technology Development includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. Projects in this category have a direct relevance to identified military needs and demonstrate the general military utility or cost reduction potential of technology when applied to different types of military equipment or techniques.

PM TRASYS TTD programs are training requirements-focused. Any given USMC Mission has a Mission Essential Task List (METL). The METL then determines the Collective Training Standards (CTS) and Individual Training Standards (ITS) required to ensure training readiness for that mission. The CTSs and ITSs are the focus of each PM TRASYS TTD program. PM TRASYS TTD has implemented a Cognitive Task Analysis/Training Effectiveness Evaluation methodology to provide objective measurement against baseline conditions. Cognitive Task Analyses (CTA) are conducted for projects within each thrust.

Each CTA will consist of five stages:

- 1) Preparation and Domain Familiarization,
- 2) Knowledge Elicitation,
- 3) Data Analysis,
- 4) Knowledge Representation, and
- 5) Application.

Products can include user interfaces, facilitation guides, scenario development, teaching points and identification of performance measures. Training Effectiveness Evaluations (TEE) are conducted on the products of each thrust. Each TEE will incorporate measures at multiple levels to provide a more diagnostic assessment of training effectiveness.

Tactical Decision-making Simulation Technology

The USMC Family of Tactical Decision-making Simulations (TDSs) is being developed to demonstrate the effectiveness and affordability of cognitive skills training simulations based on commercial gaming technology for realistic scenario-based training for individual Marines, small units, and Marine Air/Ground Task Force (MAGTF) staffs.

The desired capabilities include:



- Enhancement to formal instruction
- "Marine Corps Tactical Warfare System (MTWS) on a PC" capability that is CD-ROM-based and provides war gaming
- Multi-echelon, multi-player, network compatible with robust After Action Review (AAR) for enhanced team training and teams of teams training
- Multi-scenario high repetition cognitive skills training for all MAGTF elements
- Warfighting experimentation and development of concepts and tactics for use by the Ground Combat Element (GCE), Combat Service Support Element (CSSE), Aviation Combat Element (ACE) and Command Element (CE) of a MAGTF
- Enhanced integration with real-world Command, Control, Communications, Computers, and Intelligence (C4I) systems to maximize training transfer.

The ultimate purpose of the USMC Family of TDSs is to provide affordable training for Marines, anytime, and anywhere!

USMC Family of Tactical Decision-making Simulations

The USMC Family of TDSs teach cognitive (vice psychomotor) tactical decision-making skills for Marine Corps leaders. All current and future TDSs are distributed via Compact Disk (CD) without individual license fees.

The training methodology of a TDS involves a three-phased approach:

- Conduct planning based on the Operation Order provided in the scenario
- Execute the plan in the simulation
- Conduct an After Action Review

To ensure that the proper cognitive skills are being taught in the TDSs, PM TRASYS is conducting a Cognitive Task Analysis and a Training Effectiveness Evaluation for each TDS.

The research aspects of the family of TDSs include vertical integration of training systems (training teams from different echelons of the MAGTF), horizontal integration of training systems (training teams of teams from different elements of the MAGTF), gaming technology to High Level Architecture interoperability, situational and spatial awareness, C4I to simulation interoperability, cognitive and physical integrated training and recognition decision-making, all in low-cost, deployable systems.

Precursors

Some early efforts to create TDSs are well known, such as:

- Marine Doom
- Virtual Battlefield Systems (VBS1™)

Marine Doom



Marine Doom was a project of the Marine Corps Modeling and Simulation Management Office from 1995 to 1997. Lieutenant Scott Barnett and Sgt Dan Snyder adapted the game Doom II from Id Software for training four-man fire teams. The game taught concepts such as mutual fire team support, proper sequencing of an attack, ammunition discipline, and succession of command. It incorporated M16A1 rifles, M249 squad automatic weapons, and M67 fragmentation grenades. Marine Doom supported four players on a network; each player was provided with training objectives and information about potential enemy and friendly units. Marines had to purchase the commercial game Doom II; Marine Doom would not run without the commercial game.

VBS1™



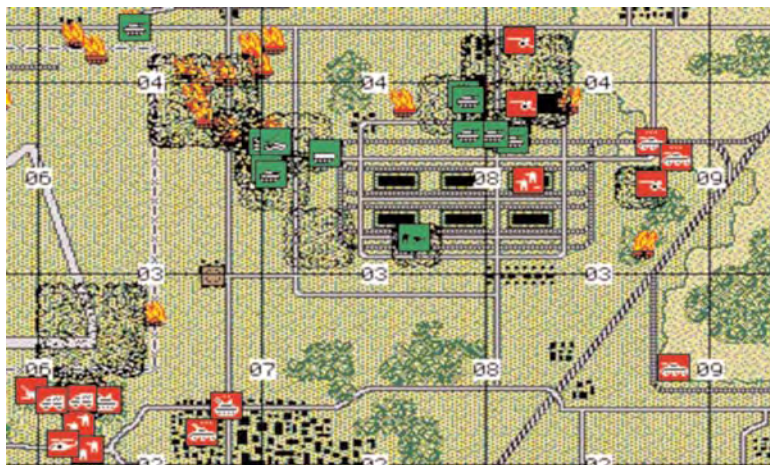
VBS1™ was developed as part of the Deployable Virtual Training Environment (DVTE) Infantry Toolkit (ITK). VBS1™ is an adaptation of the game Operation Flashpoint from Bohemia Interactive Studio. It is designed as an interactive, three-dimensional synthetic environment in which small unit tactics may be practiced among team members. Photo-realistic terrain, user-definable mission scenarios, and variable environmental conditions enhance the team training experience. VBS1™ provides the ability to operate a myriad of land, sea, and air vehicles across large outdoor terrains and allows free-play within scenario-based training missions. It supports 32 users on a local area network or across the Internet. Each user is required to have a licensed copy with a security USB key to use the simulation.



Transitioned (Fielded) Systems

PM TRASYS has transitioned six TDSs to the Tactical Decision-making Simulation System (TDSS) of the DVTE program of record.

Tactical Operations Marine Corps (TacOpsMC)



TacOpsMC, a Combat Engineering TDS developed for the Engineers School, is a PC-based, fast-paced, and tactically realistic turn-based simulation. The intent is for students, or the training audience, to be presented with a tactical situation for which they develop a plan. The students will then wargame their plan using the simulation, to provide feedback. The changing nature of the enemy will also force rapid decision-making. The simulation is modeled to simulate the execution of combined arms operations at the Company and Battalion level and will cause the Engineer Officers to apply all of their critical thinking and decision-making skills while operating as a part of a simulated MAGTF. Repeated simulation play will enhance their skills as commanders and planners. The simulation can be played in a competitive free play mode to develop combat decision-making skills. The simulation can also be used as part of a command post exercise scenario where planning is done prior to the simulation, then simulation data is used to provide feedback. Command and Control and Communications personnel can be trained using the command post exercise mode. TacOpsMC is based on the commercial product "Tactical Operations" by Maj I. L. Holdridge, USMC (Ret). TacOpsMC supports 30+ participants on a LAN. See Maj Michael L. Muller's article, "TacOpsMC: A New Training Tool," in the June 2004 Marine Corps Gazette.

Close Combat: Marines (CCM)

CCM is a real-time strategy TDS that teaches tactics at the squad, platoon, and company levels. The target audience is Non-Commissioned Officers (NCOs), Staff NCOs, and junior officers. It is designed to supplement field exercises, allowing instructors to create their own scenarios. The training scenario duration is generally limited to less than two hours with up to six players in various configurations of one-to-one, one-to-many and many-to-many. In the one to one configuration, a Marine can engage another Marine or fight the computer's Artificial Intelligence. CCM was



developed by Atomic Games and was based on the commercial Close Combat series. A copy of CCM was included in the September 2004 issue of the Marine Corps Gazette.

Combat Decision Range (CDR)

CDR is a PC-based, event-driven decision-making simulation. A Marine is provided video clips of a real-world situation, played out by both Marines and actors. The video leads to a series of events; each target event requires a decision to be made by the trainee. CDR provides a number of decision branches that facilitate the trainee's freedom to choose his own (most logical) courses of action. CDR training is best performed under the guidance of a trained facilitator. CDR was developed by GAMA Corporation for the Marine Corps Warfighting Lab.

Marine Air/Ground Task Force XXI (MAGTF XXI)

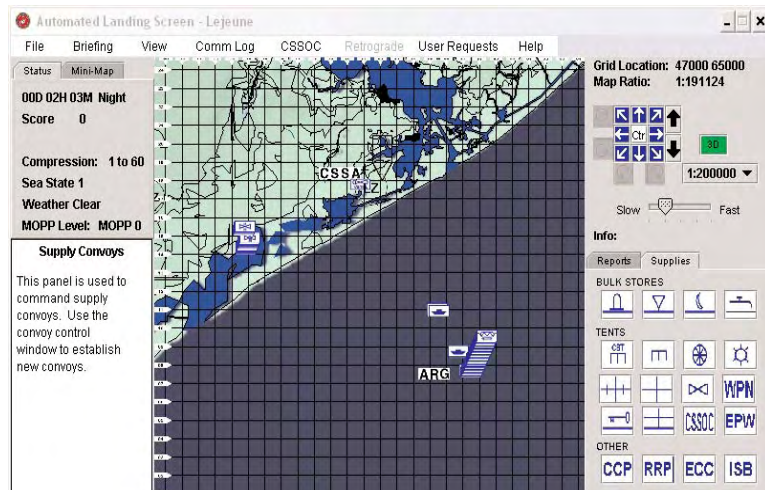


MAGTF-XXI is a battalion, Battalion Landing Team, and Marine Expeditionary Unit (MEU) Command and Control (C2) real-time strategy TDS that teaches tactics at the company, battalion landing team, and MEU levels. The target audience is Captains and Staff NCOs. MAGTF XXI can be used to help MEU commanders develop warfighting skills by allowing them to plan the battle, fight



the battle, and review the battle. At the start of training, trainees produce, via Command and Control Personal Computer (C2PC) or MAGTF XXI, all graphical and text-based products to support their military planning process. During this process, trainees collaborate on shared graphical overlays and text-based plans. When trainees are ready, they can activate the simulation and fight their plan against other players or a computer-directed enemy. During the exercise, trainees can work together to revise the plan and issue changes to subordinate unit commanders. They can manage the deployment of assets and control maneuvers, and then view the results through an eagle-eye battlefield view, panning and zooming in on the battle. At the end of the exercise, MAGTF-XXI provides charts and tracking information to determine the success of the battle plan, as well as a full recording of the exercise for later review. MAGTF XXI was developed by Mäk Technologies.

Logistics TDS



The Logistics TDS, developed for the Logistics Operations School, is a real-time strategy simulation targeted at training battlefield logistics to Lieutenants and Staff NCOs in the 0402 Logistics Officer and 0491 Combat Service Support Chief Military Occupational Specialties (MOS).

The objective of the Logistics TDS is to leverage existing technology to develop a fast-paced, realistic logistics simulation that will force logisticians to apply all of their critical thinking and decision-making skills to ensure that their Marine Expeditionary Unit (MEU) is operationally and logistically successful. The TDS allows the student to primarily serve as a Combat Service Support Operations Center (CSSOC) Watch Officer with the MEU Service Support Group (MSSG) and use Combat Service Support personnel and equipment in order to support the mission. Repeated simulation play is designed to enhance their skills as adaptive logistics commanders and planners. The mission of the Logistics TDS is to teach Marines how to plan for the full spectrum of Combat Service Support in a forward deployed, expeditionary environment while enhancing the Marine's awareness of Combat Service Support. The Logistics TDS uses the best commercial practices and the latest video simulation technology to provide users with several unique MEU mission scenarios.

Key logistics doctrine, concepts, and principles are highlighted by the play in each scenario. The Logistics TDS was developed by Technologies To Be, Inc.

Anti-Terrorism (AT) TDS - Close Combat: AT



The AT TDS developed for the Marine Corps Security Forces (MCSF) Battalion is a PC-based, fast-paced, and tactically realistic computer-based simulation. The AT TDS provides training for armed anti-terrorism and physical security personnel involving the use of deadly force to protect designated installations. The intent is for the training audience to be presented with a platoon-level tactical situation for which they develop a plan. The students will then war game their plan using the simulation to provide feedback. Repeated simulation play will enhance their skills. The simulation can be played in a competitive free play mode to develop combat decision-making skills where planning is done prior to the simulation, then simulation data is used to provide feedback. The AT TDS was developed by Destineer Studios.

Systems Under Development

In order to enhance the USMC Family of TDSs, to conduct research into the:

- vertical integration of training systems (training teams from different echelons of the MAGTF),
- horizontal integration of training systems (training teams of teams from different elements of the MAGTF),
- gaming technology to High Level Architecture (HLA) interoperability,
- situational and spatial awareness in a deployable system,
- cognitive and physical integrated training and
- recognitional decision-making.

The following TDSs are currently under development:

Close Combat: First to Fight (CC:F2F)

The CC:F2F TDS under development is a "first-person shooter" simulation targeted at small unit leaders. The overall objective of this infantry TDS is to produce a training system that will emulate the tactical combat





environment and allow squad leaders, fire team leaders, and fire team members to practice the appropriate cognitive skills in a first-person synthetic environment. First to Fight features the first-ever implementation of "Ready-Team-Fire-Assist" (RTFA), the U.S. Marine Corps' proven system of formations, movement and tactics that Marine fire teams use right now in urban combat. First to Fight's use of RTFA ensures that each of the player's three Artificial Intelligence teammates behaves the way Marines behave in live combat. RTFA guides how Marine fire teams move as a unit safely through streets under siege, cover fire sectors on stairs, take down rooms, use bounding over-watch, achieve multiple angles of fire against enemies, and much more. Because players can trust that their Marines are following RTFA, players can keep their eyes sighted, their fingers firing their weapons, and their minds focused on making the right decisions to bring their teams safely through battle. Destineer Studios is the developer of CC: F2F.

Joint Terminal Attack Controller (JTAC) TDS



The JTAC TDS under development will provide a first-person view for JTACs to develop and practice situational and spatial awareness for conducting calls for fire and Close Air Support, both fixed- and rotary-wing. The JTAC TDS will be completely interoperable with CC:F2F and CC:AT; as a result, the JTAC trainee will be immersed in a fluid combat scenario, supporting a platoon or company, rather than at a static observation post. This reinforces close coordination (and movement) with the supported ground forces. Destineer Studios is the developer of the JTAC TDS.

In order to expand the USMC Family of TDSs, to conduct research into the horizontal and vertical integration of training systems (training teams of teams from different echelons and elements of the MAGTF), and conduct research into C4I to simulation interoperability, the following TDSs are anticipated as FY06 new starts:

- Command Element C2 TDS
- Aviation Combat Element C2 TDS
- Combat Logistics Element (CLE) TDS

Copies of TacOpsMC, CCM, CDR, MAGTF XXI, Log TDS and AT TDS are available now, free of charge, for any active duty or reserve Marine.

i Adapted from Riddell, Rob. "Doom Goes To War."

http://www.wired.com/wired/archive/5.04/ff_doom_pr.html

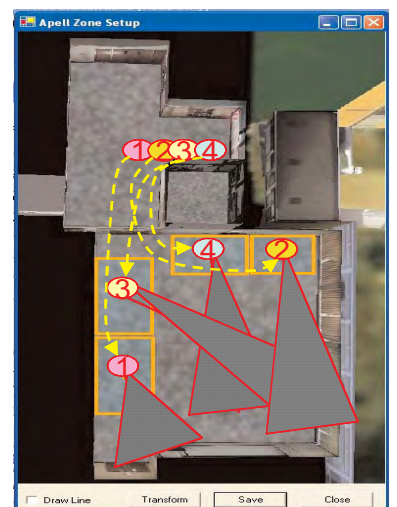
ii Tamte, Peter. Destineer Studios, June 2004.

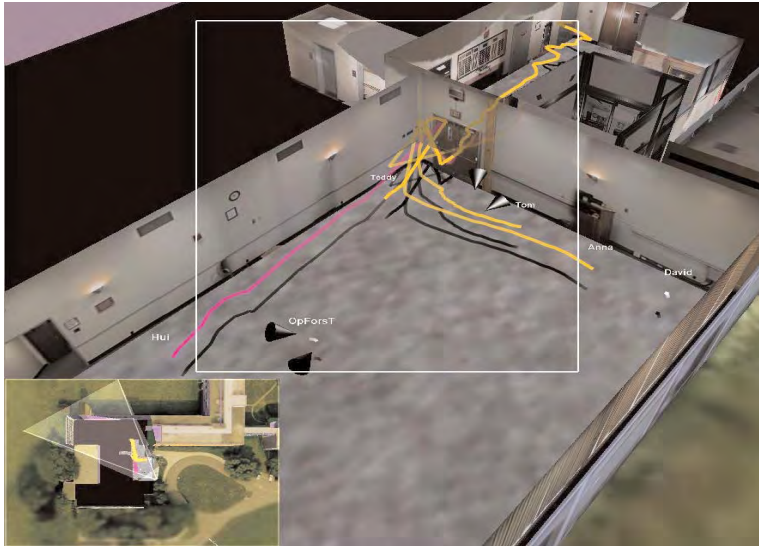
Synthetic Environment Technology

Synthetic Environment (SE) technology is being developed to provide a deployable live fire and force on force training capability. The SE technology has been developed to



provide the capability to rapidly create geo-specific three-dimensional models of the interior and exteriors of buildings in a MOUT training environment. Real time video integration (Video Flashlights) technology and position information technology have also been developed to provide a visualization and tracking capability for small unit members in the context of the three dimensional model. This information is recorded and played back providing precise adjudication of training events and situational awareness during after action review. This technology also provides a mission rehearsal





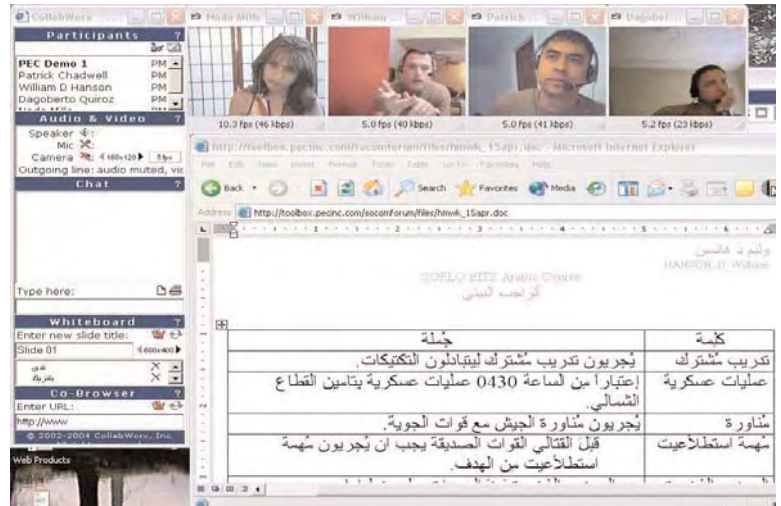
capability. This provides a strong foundation for further development of Automatic Performance Evaluation and Lessons Learned (APELL) technology. For a given training facility the training events including individual position location information, orientation and weapon orientation will be recorded for subsequent analysis. The APELL technology will enable individual and team performance to be assessed based on Marine Subject Matter Expert (SME) guidance. The assessment will enable dynamic scenario modification to accelerate individual and team performance along the novice to expert training continuum. A key part of the technology required to provide a dynamic scenario modification capability is the capability to provide a realistic synthetic opposing force for the live fire and force on force training events. Advanced image projection technologies will be developed to provide this capability. In addition, the enhanced situational awareness from this technology provides a real time safety intervention capability during training events

Transitioned (Fielded) Systems

PM TRASYS has transitioned the Real Time Video Integration (Video Flashlights) Technology to the Range Modernization and Transformation (RMT) program of record. Video Flashlights are installed at Range 200 at the Marine Corps Air Ground Combat Center (MCAGCC) 29 Palms, CA and at the Marine Corps Security Force (MCSF) Battalion live fire training facility in Chesapeake, VA.

Language and Culture Training Technology

The USSOCOM sponsored Special Operations Forces Teletraining System (SOFTS) is being developed to enhance foreign language training capability. The objective of the SOFTS is to provide a PC-based collaborative learning environment that delivers synchronous distance learning language training to Soldiers, Sailors, Airmen and Marines at any location where they have access to broadband Internet services.



The USSOCOM sponsored Tactical Language and Culture Training System (TLCTS) is being developed to enhance tactical language and culture training capability. The objective of the TLCTS is to provide a PC-based, scenario-oriented training tool for foreign-language impaired students that delivers a usable grasp of culture, gestures, and situational language for Iraqi and Pashtu.



These projects greatly enhance the USMC's and DoD's capability to provide the foreign language and culture training required to fight and win the Global War On Terror (GWOT).



Marine Aviation Liaison



LtCol Edwin Coyl
Marine Aviation Liaison

Mission: To facilitate the development, fielding, and maintenance of aviation training systems in order to satisfy the training requirements of the Marine Corps' Aviation Combat Element.

Overview

The Aviation Liaison Division resides within the NAVAIR, Orlando Training Systems Division (NAVAIR, Orlando-TSD) Program Directorate for Aviation, and is co-located with the PM TRASYS in Orlando, Florida. Liaison team members work in an Integrated Product Team (IPT) environment to coordinate fleet requirements with the acquisition community (Naval Air Systems Command (NAVAIRSYSCOM) and MCSC). Historically, the Aviation Liaison Division's focus has been on supporting individual aircrew training requirements for each aviation platform. However, this focus has recently expanded and continues to evolve in response to the goals and objectives outlined in the Department of Defense Training Transformation Implementation Plan and Marine Aviation Training Transformation Policy Letter. The division is ideally situated to manage and direct the interoperability of USMC aviation training assets with sister services in response to Joint National Training Capability (JNTC) initiatives, specifically a globally networked training environment, seamlessly linking ranges and simulation centers. The Distributed Mission Operations (DMO) capability will allow warfighters to train as they would fight, ensure training system interoperability, and to maintain combat readiness when not engaged in current combat operations. DMO is a transformational training element for future combat operations and promoted through the Joint Forces Command (JFCOM). As training continues to evolve, particularly with respect to integration of Live, Virtual, and

Constructive elements, our goal is to coordinate and manage the various aviation training systems in order to prepare the Marine Air Ground Task Force for success in tomorrow's battlespace.

Aviation Training Systems (ATS)

The ATS concept has been developed under direction of the Deputy Commandant for Aviation (DC/A) to institutionalize integrated training support to the fleet and will eventually encompass not only aircrew training, but aviation maintenance; and aviation command and control training as well. The objective is to provide warfighter focused, tactically relevant training to the warfighter using an operational management structure for improved training system effectiveness. As a consolidated operational training organization, ATS facilitates the identification and validation of warfighter training requirements, beginning with curriculum and training continuum development, identification and acquisition of the required training devices. ATS encompasses the organizational structure to maintain currency, support and manage aviation training.

When fully implemented ATS will leverage common solutions achieved via an integrated product team process that invests in fleet, industry and acquisition workforce synergies across various platforms/communities resulting in savings of both money and time. These savings will produce more responsive training to the fleet and will free funding for other training requirements.

Marine Aircrew Training Systems Squadron (MATSS)

MATSS consolidates the management, scheduling, maintenance and operation of aviation training systems and resources under the 2d Marine Aircraft Wing (MAW) operational forces at MCAS New River (NR). MATSS NR has been designated the prototype ATS organization for what will eventually be a network of Aviation Training Learning Centers that will reside at all Marine Corps aviation simulation sites. The aircrew training systems and simulation sites will be linked via the Tactical Environment Network (TEN), a non-proprietary, government owned and controlled software product.

Phase II of MATSS development officially concluded on 01 October 03 with the transfer of MATSS command from VMMT-204 to Commanding General 2d MAW and MATSS transitioning from an MV-22 centric training organization to one representing all 2d MAW type/model aircraft in service at MCAS New River.

At the present time MATSS NR manages the following training resources:

- CH-53E Weapons Systems Trainer (WST-primary motion simulator)
- CH-53E Aircrew Procedures Trainer (APT)
- CH-46E APT



- AH-1W WST
- UH-1N APT
- (3) MV-22 Full Flight Simulators (FFS-primary motion simulator)
- (1) MV-22 Flight Training Device (FTD)
- AS-318/320/255 Facilities (classrooms, conference rooms, briefing rooms)
- MATSS Website
- MV-22 Courseware
- MATSS Personnel (Simulator instructors, maintenance personnel, technicians, training system management personnel, and specialists {such as Crew Resource Management experts})

MATSS exists to be a resource for operational forces. It fulfills three primary functions:

- MATSS coordinates, facilitates and conducts aviation training.
- MATSS consolidates and refines requirements for, maintains and manages aviation training systems and resources.
- MATSS is the operator's link to HQMC (APW), Naval Aviation Systems Command (NAVAIR) and Training and Education Command (TECOM) for aviation training systems.

Phase III of the MATSS development process will propagate the MATSS NR template to other simulation sites in 2d MAW and will then migrate the process to 3d, 1st and 4th MAWs.

Aviation Training Systems Transformation Task Force (ATS-TTF)

The Deputy Commandant for Aviation established the TTF as a tool to ensure the effective introduction of new aviation systems into the operating forces. The TTF provides a mechanism for operating forces to act in concert with appropriate Program Offices and acquisition agencies in the formulation and implementation of each pillar of the Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) model with regards to training. The purpose of the ATS TTF is to link the numerous organizations and processes responsible for the Marine Aviation training continuum. The endstate is to ensure all Marine Aviation communities are provided a comprehensive, integrated and standardized training system. Each member of the Aviation Liaison Division is a member of the ATS-TTF along with members from Headquarters Marine Corps (AVN, SD), MCCDC, TECOM, MARFORLANT, MARFORPAC, COMCABEAST, COMCABWEST, CNO (N00T), COMNAVAIRLANT (N38A), COMNAVAIRPAC (408A), and NAVAIR (PMA-205, NAVAIR Orlando TSD).

Effectiveness of the Aviation Liaison Division is measured in terms of these key performance elements:

- Timely prioritization and validation of aviation training requirements
- Application of industry best practices to aviation training systems
- Enhance standardization in aviation training systems
- Delivery of on-time, concurrent, and tactically relevant aviation training systems
- Affordable aviation mission readiness

Guiding principles for the Aviation Liaison Division are:

1. Integrity to the Fleet. Keep the fleet informed by abiding to basic Corps values in all operations. Tell the truth, abide to commitments, consider the interests of all stakeholders, and be candid about shortcomings and challenges. Make sure that business integrity drives every aspect of team operations.

2. Fleet Project Team participation is essential. The fleet crewmember and maintainer is the customer. Early and frequent participation/consultation with the fleet ensures delivery of value.

3. Training objectives guide training solutions. Training is a human endeavor - not a technological challenge. Clarity of training objectives, tasks, and requirements facilitate effective training systems. Technology for technology's sake does not train Marines. Know, understand, and document the training task before attempting to develop a solution.

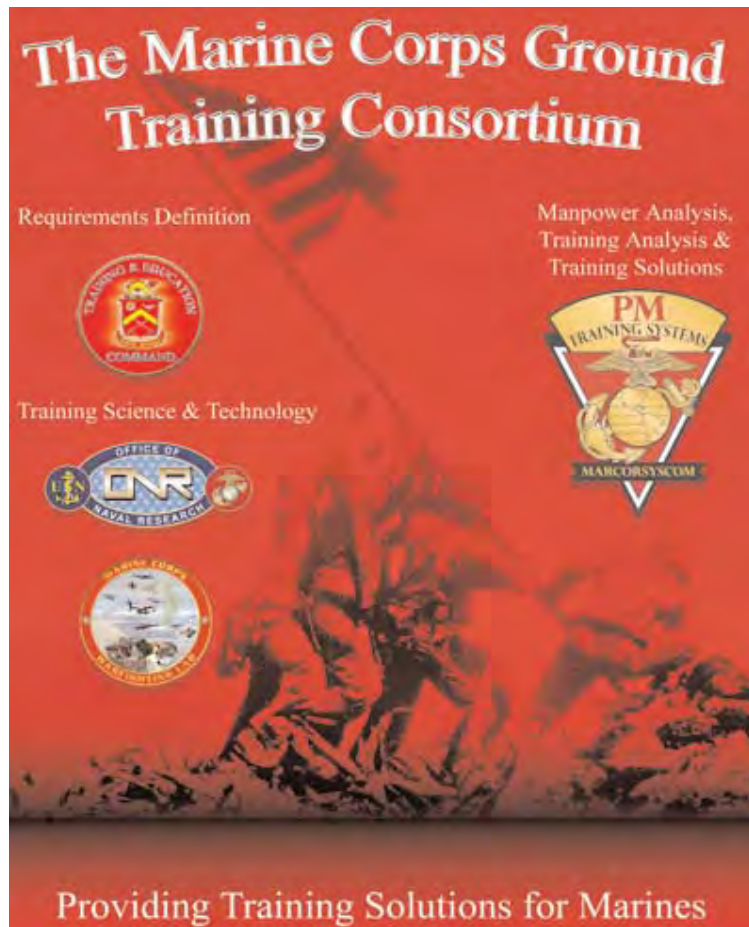
4. Deliver the right value to each group of stakeholders. Operational communities focus on daily obstacles. Planners focus on long-term resourcing. Delivering sound training solutions to the fleet requires an awareness and understanding of both challenges.

5. Get out and see the environment. Frequent and regular observation of military services, government agencies, and industry serves the customer. Understand the peril of obsolescence and manage it continuously. Develop a proactive approach to monitoring the environment and communicate the ongoing changes to the team in the face of its own challenges.

Ask every day "What have I done for the fleet today?"



Marine Corps Ground Training Consortium



Marine Corps Ground Training Consortium

PM TRASYS works in close partnership with several organizations to provide the best training solutions possible for Marines. The independent and interactive efforts in the areas of training and education by each of these organizations focuses on developing and delivering the most current and effective training available. A key member and a primary recipient of the products from these efforts is the Marine Corps Training and Education Command (TECOM) located in Quantico, VA. The organization and mission of TECOM are featured below along with selected sections that reinforce the partnership required to provide the best possible training and education solutions during new acquisitions. The never ending goal of this partnership is to produce the right Marine, at the right time and place, with the right skills required to succeed on today's modern battlefield.

Marine Corps Training and Education Command Quantico, Virginia

TECOM Mission and Organization: The mission of Training and Education Command is to "Develop, coordinate, resource, execute, and evaluate training and education concepts, policies, plans, and programs to ensure Marines are prepared to meet the challenges of present and future operational environments". To accomplish this diversified and burgeoning mission TECOM is further broken down into seven subordinate commands located across the Corps.

These seven subordinate commands are: Training Command (TRNGCOM), Education Command (EDCOM), Marine Air Ground Task Force Training Command (MAGTFTC), Marine Corps Recruit Depots San Diego and Parris Island, Marine Aviation Weapons Training Squadron 1 (MAWTS-1), Mountain Warfare Training Center (MWTC).

Key TECOM Staff Sections that interface with PM TRASYS

TECOM G-3

The TECOM G-3 is the primary coordination and integration agency that PM TRASYS interfaces with during new and existing acquisitions. This coordination also includes the establishment of policies, procedures, and processes that standardize how training, education, and manpower issues are resolved and implemented during new and existing acquisitions. The G-3 supports PM TRASYS by conducting coordination and liaison with all formal schools and detachments. Assigns action officers to track, support, and resolve manpower and training issues during new and existing acquisitions. Provides expertise on overarching training and education policies/directives. Reviews and staffs manpower and training analysis/plans to insure training solutions satisfy TECOM's funding and resourcing requirements. Assist in the coordination with advocates, Occupational Field sponsors, Total Force Structure and other outside agencies impacted by any new or existing acquisition.

TECOM Technology Division (TechDiv)

Technology Division and the Program Manager for Training Systems maintain the partnering relationship of Resource Sponsor and Acquisition Manager. As the Resource Sponsor(POM sponsor) and Requirements Generator (JCIDS and internal USMC requirements developer) for USMC ground training systems, Technology Division is responsible for the review and analysis of Marine Corps needs (to include School Houses), generating requirements to support those needs, and assessing the potential of technologies to support future needs. Technology Division does not view technologies for acquisition potential but rather for the potential of industry to fulfill far term needs (concepts and visions) in support of Expeditionary Maneuver Warfare. The analysis and evaluation of technologies helps to better shape Marine Corps training requirements and reduce risk for our acquisition partners. Technology Division's responsibilities extend only to ground-based systems. Requirements generation and resource sponsoring functions for aviation specific training and education technology is the responsibility of NAVAIR. The types of solutions that Technology Division has sponsored include computer-based training devices, wargame simulations, range instrumentation and MILES, ammunition substitutes like SESAMS, marksmanship and combat marksmanship trainers, armored vehicle crew simulators, call-for-fire and fire support staff trainers, tactical decision-making training systems, and the Deployable Virtual Training Environment.



Technology Division also represents the Marine Corps at DoD, Joint and Interservice meetings pertaining to training systems and Modeling and Simulation, and represents TECOM on internal Marine Corps matters pertaining to the same. These meetings include the Joint Training Functional Capabilities Board and the Joint Training Review Group. Technology Division also serves as the MCMSMO (Marine Corps Modeling and Simulation Management Office) which represents the Marine Corps to the Defense Modeling and Simulation Office (DMSO) under DoD on high-level modeling and simulation management issues.

TECOM Range and Training Area Management (RTAM) Division

RTAM Division was established to provide advocacy, policy, and headquarters oversight for range matters throughout the Marine Corps. Recent developments with respect to encroachment, safety, legal matters, weapons development and environmental issues have demonstrated the need for the Marine Corps to speak with a single voice to protect and sustain our valuable training sites. The RTAM Division is the entity to advocate and provide that single voice.

Accordingly, RTAM Division performs the following major functions:

- Acts as the proponent for all matters pertaining to the oversight and coordination of ranges and training areas.
- Represents the Marine Corps at DoD, Joint and InterService level meetings pertaining to ranges and training areas.
- Develops and publishes policy and programs to ensure efficient utilization of ranges and training areas.
- Develops plans and policy for the sustainment, upgrade and modernization of ranges and training areas.
- Coordinates Marine Corps legal policy with respect to range and training area issues.
- Acts as the single point of contact for USMC range (ground and air) safety issues to include certification and re-certification.
- Develops and fields a single Marine Corps Range Management System that provides for scheduling/managing ranges and includes training and management tools to enhance training effectiveness and range safety.
- Serves as the program sponsor for all Marine Corps training range programs and, as such, prepares a single, integrated program for POM consideration.

Interface and coordination with the PM TRASYS is nearly continuous. RTAM provides requirements information for POM initiatives dealing with ranges and training areas. PM TRASYS is our principal POC for all equipment purchased under the Ground Range Sustainment Program, the procurement POM initiatives, and all congressional adds or supplemental appropriations. PM TRASYS also manages the Contractor Operation and Maintenance of Simulators (COMS) contracts that provide contractual support services to ranges and training areas that have been the recipient of training systems acquired through RTAM initiatives. TECOM (RTAM) and PM TRASYS have begun coordination to establish an overarching range maintenance and operations

contract.

TECOM College of Continuing Education

The College of Continuing Education (CCE) develops the professional competence of Marine, other service, international, and civilian students by developing and implementing Professional Military Education (PME) and training via distance learning. This is accomplished through a worldwide network of satellite campuses, Video Tele-Training (VTT), Learning Resource Centers (LRC) and the Internet. The programs and courses concentrate on the leadership, warfighting and staff development skills of the nation's military, and feature the educational standards, learning areas and learning objectives of the Joint Professional Military Education (JPME) program required by the Chairman of the Joint Chiefs of Staff. Through a variety of distance learning delivery systems, programs are accessible globally, thus preparing the graduates to perform more effectively in service, joint, and multinational environments at the tactical, operational, and strategic levels of war as well as in situations ranging from humanitarian assistance to combat. Interactive multi-media instruction is also developed in support of the TECOM Centers of Excellence.



Marine Corps Live, Virtual, Constructive Training Environment Architecture

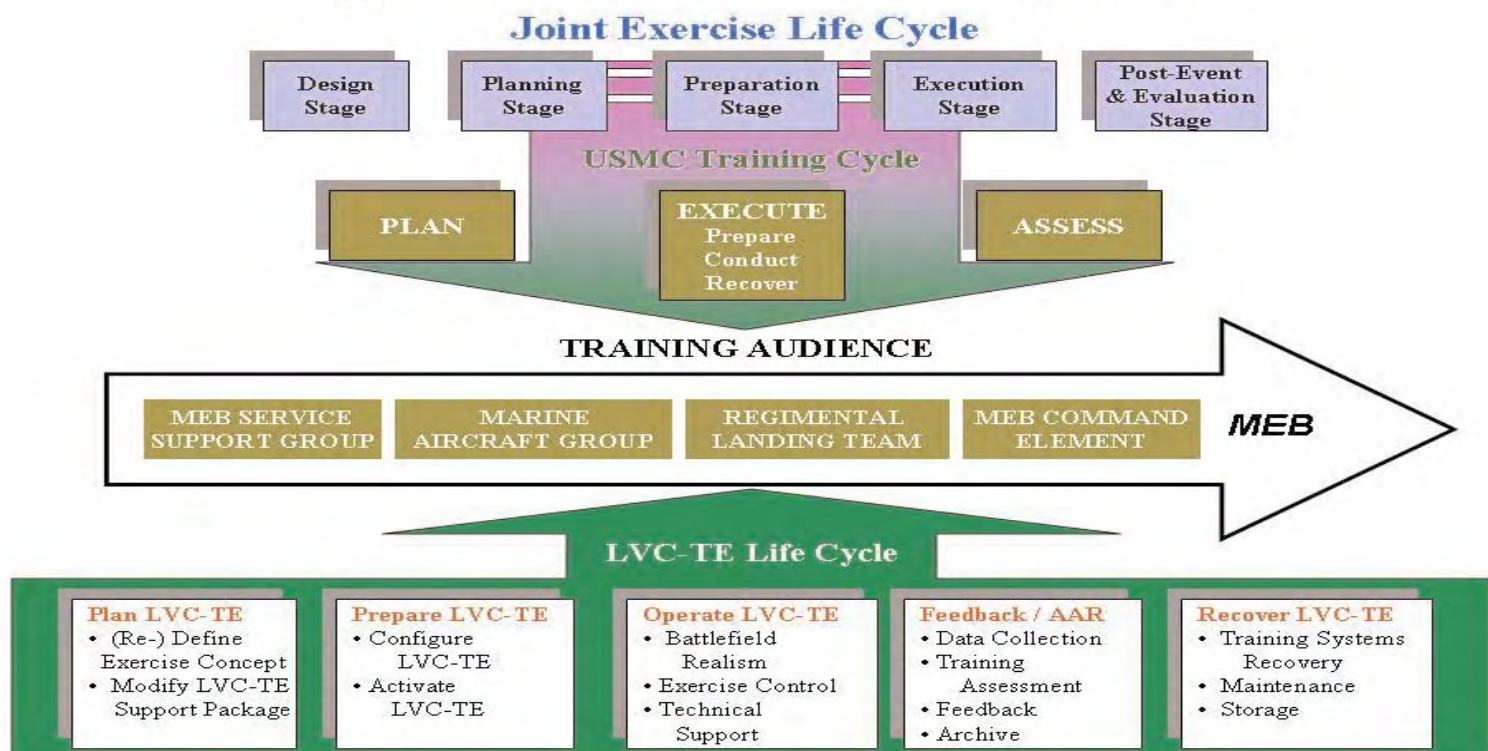
PM TRASYS has an on-going effort to document the architecture of the USMC Training Environment (TE). Immediate focus is the integration of Live, Virtual and Constructive (LVC) training systems procured by PM TRASYS into a Live Virtual Constructive Training Environment (LVC-TE). Today that LVC-TE generally consists of Combined Arms Command and Control Upgrade System (CACCTUS), Deployable Virtual Training Environment (DVTE), MAGTF Tactical Warfare Simulator (MTWS), Tactical Engagement Simulation Systems (TESS), Multistatic Dependent Surveillance (MDS) system, Remote Engagement Target (RETS), and Multiple Integrated Laser Engagement System (MILES 2000). The near-term goal is to provide a comprehensive basis for integration of these programs to meet existing Marine Corps training requirements. These requirements are strongly influenced by the requirements of JNTC/T2 (OSD's Joint National Training Capability & Training Transformation initiatives). The JNTC Implementation Plan specifically calls for the Services to develop the training system architecture in accordance with DoD Architecture Framework (DoDAF). The LVC-TE Architecture will be developed to map where, how, when training systems will fit within the Marine Corps Integrated Architecture Picture (MCIAP).

The Live, Virtual, Constructive Training Environment (LVC-TE) Architecture Description is being developed to

describe the fundamental relationships among training systems, tactical systems and units of a MAGTF, and the Joint National Training Capability. These relationships: — interoperability, sustainability, and suitability; — are established for each phase of the LVC-TE Life Cycle as its components are planned, prepared, operated, and recovered in the course of supporting Marine Corps and Joint training.

The processes for articulating LVC-TE Architecture Description provides logical and methodical “system of systems” processes to manage the integration and interoperability of training systems independently and integrate with C4ISR and other tactical systems. The LVC-TE Architecture Description aids to establish the fundamental interoperability, sustainability, and suitability relationships among its training systems, the tactical systems and units of the MAGTF, and the JNTC necessary to create the synthetic training environment(s) for Marine Corps Service and Joint training. The end users of the LVC-TE Architecture Description are PM TRASYS and other developers of Marine Corps training systems. The LVC-TE Architecture Description is a living document subject to periodic updates to support evolving training requirements, advances in enabling technologies, the development of new training systems, and adjustments in DoD business practices.

USMC TRAINING ENVIRONMENT High Level Operational Concept OV-1



Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) 2006

Each year over 16,000 participants gather in Orlando for the premiere international military training conference. Participants come to see what industry has to offer and to gather information from the over 160 tutorials and paper presentations. I/ITSEC 2006 will be held 4-6 December 2006 at the Orange County Convention Center, Orlando FL. The 2006 conference theme is "Training the 21st Century Joint Force....Mission Focused to Achieve Warfighting Excellence".

PM TRASYS, as the Marine Corps host for the conference, encourages Marines to place this conference on your schedule and attend. With over 400 exhibitors, this conference definitely has something to offer for all the areas of training from learning management systems, to gaming technology, the classroom, distance learning, simulation; and live training operations and ranges.

Hope to see you there.

Stop by the Marine Corps booth to see what the Marines are doing and let us know how we can assist you.

Contact PM TRASYS for information or visit the I/ITSEC website www.iitsec.org.



*Interservice/Industry Training,
Simulation & Education Conference
2006
December 4-6, 2006 | Orlando, FL*

Training the 21st Century Joint Force...
....Mission Focused to Achieve Warfighting Excellence



Fielded Marine Corps Ground Training Systems

Listed below are many of the systems receiving various levels of life cycle sustainment support from PM TRASYS and the TIERS. For further information, contact PM TRASYS at 407-381-8762 or pmtrasys@usmc.mil.

Amphibious Training Demonstrator



The Amphibious Training Demonstrator is used to train personnel of the Navy, Army and Marine Corps in the doctrines, tactics, and techniques for all phases of an amphibious operation.

Using video, slide shows, terrain and sea representations, movable models, and electronic lighting and effects, the trainer can represent a complete amphibious assault.

The Amphibious Training Demonstrator is available at the following location: Expeditionary Warfare Training Group, Atlantic, Little Creek, VA.

Armor Moving Target Carrier (AMTC)

The AMTC is a target mover designed to carry a wooden tank silhouette target over a 300meter length of track. It is used in the training of anti-armor weapons. It provides a moving target with the capability



of raising and lowering armor target silhouettes through a 90 degree arc. It provides an indication when the target silhouettes are hit. With the addition of the Joanel

Pyrotechnic Device the system can also simulate firing hostile and/or target kill. These movers are radio controlled and can operate in winds of up to approximately 20 MPH. The AMTC are available at the following Marine Corps Bases: Marine Air Ground Task Force Training Center, 29 Palms, CA.

Basic Electronics Trainer / Labvolt's Fault Assisted Circuit Equipment Trainer (FACET)



FACET is a desktop computer and printed circuit board interface base station system that instructs the student in basic electronics theories and principles through hands-on lab and Interactive Courseware. This trainer augments the lecture portion of the Basic Electronics Course that all Marine electronics repairmen and technicians must complete and constitutes over 40% of the 51 training day course.

FACET is available at the following location: Marine Corps Communications and Electronics School 29 Palms, CA.



Black Smoke Generator



During live fire exercises, the Black Smoke Generator provides Marine forces with a visual indication of direct hits on opposition force targets.

Cardiopulmonary Resuscitation (CPR) Learning System



The CPR Learning System is used to provide cardiopulmonary resuscitation training and certification. The CPR Learning System is available at the following location(s): Marine Corps Base, Camp Lejeune, NC.

Combined Arms Staff Trainer (CAST)



CAST is a computer-aided simulation system used to train Marines in the proper employment and coordination of fire support assets in support of the ground commander's scheme of maneuver. The CAST is used to emphasize the detailed planning and coordination required to develop, execute, and validate a particular scheme of maneuver and its fire-support plan. The process utilized in the CAST requires each echelon in the fire support command to communicate and properly execute their respective functions before the requested support materializes. The trainer is used to allow the using units to prepare, test and refine operation orders, including supporting arms requirements, in response to both friendly and opposing forces scenarios. The CAST is available at the following locations: Marine Corps Bases Camp Lejeune, NC Camp Pendleton, CA, Okinawa, Japan, and Hawaii.

Combat Vehicle Training System (CVTS)



CVTS-M1A1, which is a fully self-contained, land-based training system, provides the Marine Corps the ability to



train M1A1 crewmembers to approved standards of combat skills and readiness. The CVTS-M1A1 provides gunnery proficiency, weapons platform familiarization, and tactical training. The CVTS-M1A1 land-based training system



is comprised of relocatable and mobile configurations. The relocatable configuration is housed in its own shelter with AC unit and power supply. The mobile configuration is housed in its own shelter with AC unit and power supply, but is on a mobile trailer.

The CVTS-M1A1 is fielded at the following locations: fielded at Marine Bases Camp Lejeune, NC, Camp Pendleton, CA, the Marine Air Ground Task Force Training Center, 29 Palms, CA and other Marine Force Reserve locations.

Distance Learning (DL)



DL is the USMC E-Learning Infrastructure that enables Marines to receive training and education via the appropriate interactive media, when and where the learning is needed. DL provides access to learning resources and performance support tools to a greater population of Marines. DL increases the effectiveness of training and education through use of technology. DL contributes to the Marine Corps' operational readiness by providing all Marines with access to military occupational specialty (MOS) and common skills training opportunities and Professional Military Education (PME). DL capabilities fill

critical gaps in the training and education continuum and can reduce the amount of time Marines are required to be away from their home duty station attending formal training. DL gives the commander a better-trained Marine while increasing personnel availability to accomplish the unit's mission.

DL consists of commercial-off-the-shelf (COTS) hardware and software that is that runs on the Navy/Marine Corps Intranet (NMCI)/Marine Corps Enterprise Network (MCEN). Various DL suites have been fielded to major Marine Corps bases and stations.

DL suites are as follows:

- Content Delivery Engines (CDE) (Network Appliances that host content)
- Centralized Learning Management System (LMS) for Student Administration
- Learning Resource Centers (LRC)
- Video Teletraining Training (VTT) Centers
- Deployable Learning Resource Centers (DLRC).

LRCs are located at Marine Corps bases, stations and detachments worldwide. Locations include Camp Pendleton, Camp Lejeune, Quantico, Okinawa, Iwakuni, Hawaii, MCRD San Diego and MARFORRES.

CDEs serve content to both the LRCs as well as local base desktop users. DLRCs are located at Camp Lejeune, Camp Pendleton, Okinawa, MARFORRES and 29 Palms for use when deployed aboard ship or in a tactical environment.

An Internet site provides access to Marines from home via their Internet service provider. DL has more than 1500 courses available of which 300 are Marine Corps developed. For access go to www.marinenet.usmc.mil.

Dust Generator



During live fire exercises strategically placed Dust Generators provide Marine forces with visual indicators of opposition force presence and movement.



Enhanced Remoted Target System (ERETS)



Also Known as RETS, the ERETS is targetry equipment which, when installed on standard ranges, supports marksmanship, gunnery, and combined arms training. ERETS consists of stationary and moving infantry and armor target hardware with related control hardware and software. A range control station provides automatic and manual control of target mechanisms, detects and accumulates target hit data, and prints a permanent record for evaluation of the firer's or crew's performance. Simulators adding realism to training scenarios include infantry night muzzle flash, armor target kill, and infantry and armor hostile fire simulators.

The RETS range system may include the following major components: Infantry Target Mechanism (ITM), Infantry Moving Target Carrier, Rifle Fire Simulator, Range Control Station, Target Holding Mechanism Tank Gunnery, Armor Moving Target Carrier, and Gunfire Simulator.

Part of ERETS is a moving version of the ITM that consists of a hard-wire controlled infantry pop-up target mechanism. This allows Marines to engage a moving target.

ERETS are located on several live fire and simulation training ranges at Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Center, 29 Palms, CA.

Hostile Fire and Target Kill Simulator (Joanell Device)

The Hostile Fire and Target Kill Simulator (Joanell Device) is a pyrotechnic device used to simulate either hostile fire or target hits. One of various pyrotechnic packages are inserted into the tubes and fired remotely: i.e. L602



Arty Flash Simulator - simulating enemy arty shooting at friendly forces, L709 Simulator Target Hit - flash representing a hit to a target, and L720 Target Hit - black smoke representing a destroyed target.

The Hostile Fire and Target Kill Simulator (Joanell Device) is available at the following locations: Marine Air Ground Task Force Training Center, 29 Palms, CA.

Javelin Basic Skills Trainer (BST) (Indoor)



The BST (Indoor) is used to provide target acquisition and target engagement practice in a classroom environment using simulated targets in lieu of an actual Javelin. The BST is a three-dimensional training device, consisting of an Instructor Station and a Student Station. A computer in the BST Instructor station generates battlefield scenes. The scenes provide a wide range of training situations to which the gunner must react using the Student Station. The exercises are developed from a set of terrain data (e.g. desert, rolling, built-up), scenarios (target paths), weather conditions (e.g. clear, rain), run times (1 to 7 minutes), and malfunctions (e.g. hang-fire, misfire). The Javelin BST is designed as a classroom or shipboard trainer.



The BST (Indoor) is available at the following locations: Marine Corps Bases, Camp Lejeune NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Javelin Field Tactical Trainer (FTT) (Outdoor)



The FTT is used to provide target acquisition and target engagement practice in a range or field environment using simulated or real targets in lieu of using an actual Javelin. The FTT is used for Situational Training Exercises (STX) or Field Training Exercises (FTX). The FTT with Instructor Station (IS) adds the capability of monitoring, reviewing, and recording gunner activities. The FTT with or without the Instructor Station can be used to train and reinforce gunnery skills. A Javelin Command Launch Unit (CLU) is required, but is not a component supplied with the FTT. The FTT provides visual, aural, and physical cues associated with the Javelin Missile when engaging targets. Visual cues provided by the FTT include simulated Seeker imagery with the appropriate track gate and crosshairs. Aural cues include a simulation of launch signature effects of the Javelin Missile. Weight of the Simulated Round (SR), when connected to the CLU, provides the simulation of the Javelin Missile.

The FTT is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Improved Moving Target System (IMTS), Stinger

The IMTS Stinger provides training to STINGER missile gunners by presenting aircraft targets to students in a controlled training environment, which represents types and flight paths that may be encountered in a defined area.

The IMTS Stinger is located at the following locations: Marine Corps Base Camp Pendleton, Ca, Marine Corps Air Station, Cherry Point, NC, and Marine Corps Base, Okinawa, Japan.



Indoor Simulated Marksmanship Trainer-Enhanced (ISMT-E)



A one screen, computer-based system designed to train students in weapon operation and proficiency, with realistic simulated weapons, which duplicate the form, fit, and function of the service weapon. The simulated weapons are equipped with laser devices that simulate the firing of ammunition. Training exercises in lanes/marksmanship and computer-generated imagery (CGI) graphics modes are included in the delivered system. Additional training scenarios may be created or edited by the instructor on the system PC.

Linking three ISMT-Es together as a single trainer, is known as an Infantry Squad Trainer (IST). The IST configuration trains up to 12 shooters to provide squad training.



ISMT-Es are available at the following locations: Marine Corps Bases Camp Lejeune ,NC, Camp Pendleton,CA Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and supporting establishment Reserve sites throughout the world.

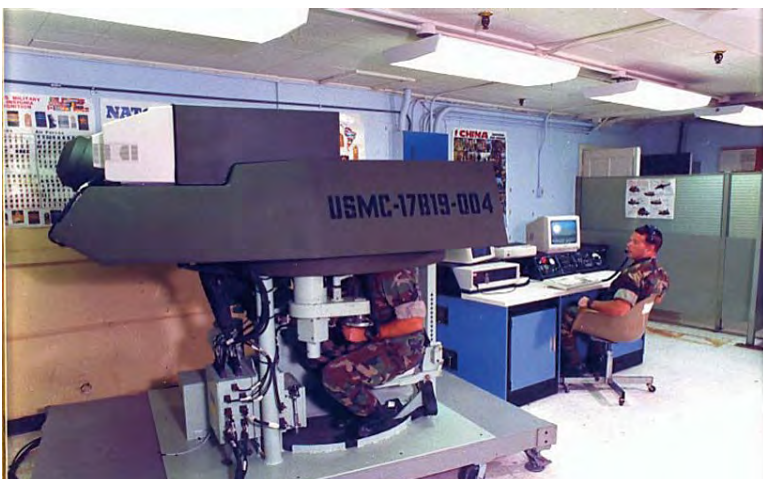
Light Armored Vehicle Full Crew Interactive Simulation Trainer (LAV-FIST)



The LAV-FIST is an appended trainer for the LAV-25. It is designed to provide familiarization, proficiency, and sustainment training to the LAV-25 crew. The LAV-FIST will provide individual training for crewmembers, as well as, complete coordinated crew training. The system will provide training in the skill areas of gunnery, crew coordination, and tactics.

The LAV-FIST is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Marine Corps Reserve Operational Forces.

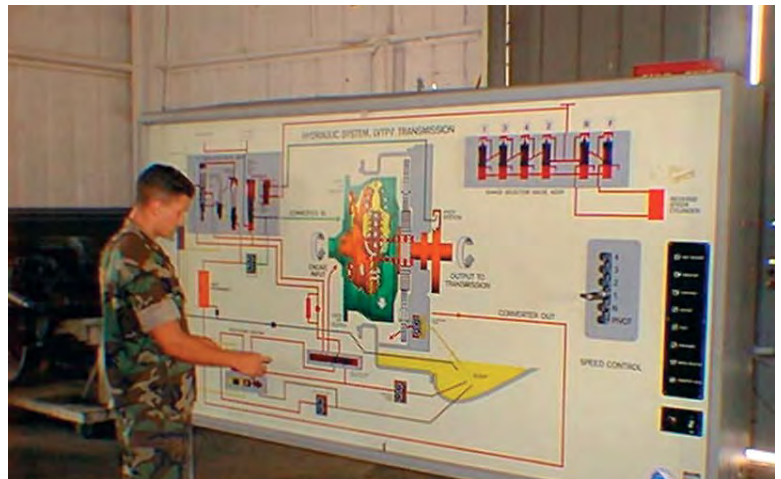
Light Armored Vehicle (LAV) Turret Trainer



The LAV Turret Trainer is a stand-alone training device that uses microprocessors, a videodisc player, and mockup assemblies to simulate the LAV turret operations and precision gunnery effects. This device was fielded in 1981.

The LAV Turret Trainer is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Marine Corps Reserve Operational Forces.

LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System



This trainer is an animated display panel depicting a stylized diagram of the hydraulic flow operation, an animated cutaway view of the converter assembly, a mockup of the speed control unit, and a switching control panel.

The trainer is designed to provide a simplified interpretation of the sequential steps that occur in the operation of the hydraulic system of the LVTP-7 transmission.

The LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVTP-7 Assault Vehicle Take Off Power



The trainer is used in the classroom for basic training in the operating principles and general arrangement of components of the LVTP-7 PTA mechanism. The trainer is also used to demonstrate the operation of the LVTP-7 power takeoff assembly, showing the interrelationship of components to each other and to the input gear and output yokes. Trainees are Marine Corp maintenance personnel. The LVTP-7 Assault Vehicle Take Off Power is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

Live Fire Military Operations in Urban Terrain/Urban Warfare Training Center (MOUT/UWTC) Facilities



The MOUT/UWTC Live Fire Facilities includes company live fire and maneuver training complexes and multi-vehicle convoy live fire and maneuver training complex. The complexes consist of 3 types of structures:

- 1) modular, nonpermanent, internally reconfigurable, breachable/seizable enclosed structures, live-fire capable internally/externally up to 7.62mm
- 2) modular, nonpermanent, empty, partially seizable, enclosed structures, live-fire capable internally/externally up to 7.62mm;
- 3) and nonpermanent, non-enterable 4-sided façade structures.

Individual and small units up to company size conduct foot, mobile, mechanized and/or armor patrols up to and

through the two sites. Operations are conducted during both day and night. Individual, crew served and indirect fires are employed with 5.56mm and 7.62mm ball ammunition used to fire at targets and structures within the MOUT area and larger weapon systems directed at targets in outlying areas. Fire and maneuver occurs along and between primary and secondary streets and access ways. The first two types of structures have capability to support and sustain fires at internally placed targets. Both training facilities contain dispersed structures to support 360 degree training of fire and maneuver. Roads are variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA.

Non-Live Fire Military Operations in Urban Terrain/Urban Warfare Training Center (MOUT/UWTC) Facilities



The Non-Live MOUT/UWTC Facilities are training facilities based on extensive studies by the Marine Corps Warfighting Laboratory, which have shown that units trained to operate as an integrated combined arms team are more successful within the urban battle space and suffer fewer casualties. With this in mind and given the nature



of operations in support of Operation Iraqi Freedom and the Global War On Terrorism the requirement to train company and battalion sized forces is critical. Individuals and small units up to battalion size conduct foot, mobile, mechanized and/or armor patrols up to and through the site. Operations are conducted during both day and night. The training facilities contains dispersed structures to support 360 degree training of fire and maneuver. The MOUT/UWTC Non-Live Fire Facilities is used for company and battalion pre-deployment force-on-force fire and maneuver training using SESAMs ammunition and/or MILES gear within an urban terrain facility. Roads are of variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Non-Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms, CA. Future fielding will occur at MCB Camp Lejeune in 3rd quarter of FY06. Plans exist for MCB Camp Pendleton, CA; MCB Quantico, VA; MCB Okinawa Japan; MCB Kanehoe Bay, Hawaii; MCAS Yuma and MWTC Bridgeport in the future.

M31A1 Pop-up Targets



M31A1 Pop-up targets are used at various RETS ranges. All are hard-wired and programmable for number of hits to kill. Targets will fall once that number has been reached. Provides Marines with a stationary individual target to engage.

M31A1 Pop-up targets are employed on several Live-Fire and Simulation Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Kaneohe Bay, HI, Quantico, VA, and the Marine Air Ground Task Force Training Command (MAGTFTC), 29 Palms, CA.

M32A1 Pneumatic Mortar Trainer



The sub caliber mortar trainer is a pneumatically operated attachment designed to adapt a 60-mm or 81-mm mortar to fire the 25-mm training projectile on a 500-inch, 1,000-inch, or 2,000-inch range. The trainer is a unit packed in a case complete with: a projectile rack with twenty 25-mm training projectiles; a barrel and valve assembly, to adapt the operational mortar to receive the 25-mm projectiles and to release compressed air charges for simulating operational mortar fire; a bottle and valve assembly, to provide compressed air supply; a regulator assembly to control the pressure released for each charge; and a quick disconnect hose assembly, for attaching the air supply to the barrel and valve assembly.

The M32A1 Pneumatic Mortar Trainers are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

MAGTF Tactical Warfare Simulator (MTWS) - Battle Simulation Center



MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation for air, ground, surface, and amphibious operations. The system is also capable of integrating with other service models of the Joint Training



Confederation (JTC) through the Aggregate Level Simulation Protocol (ALSP). MTWS can operate in Live and Constructive training environments.

MTWS is the Marine Corps advanced tactical combat simulation designed as a decision support system during training exercises to augment Marine Corps Command and Control systems. MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation with stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. The system supports tactical decision-making, and evaluation; operational planning and evaluation; and global war gaming.

MTWS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Medium Tactical Vehicle Replacement Training System (MTVR-TS)



The MTVR-TS is an operator and maintenance training system designed to support the Marine Corps new medium tactical vehicle. The MTVR-TS is comprised of a mix of operator driving simulators (ODSs), electronic classrooms (ECs), and interactive EC-based courseware that together provide the basis for all Motor Transport (Occupational Field 3500) training in the Marine Corps at the Formal Learning Centers.

The Motor Vehicle Operator Course (MVOC) is conducted at Fort Leonard Wood, MO and teaches the principles of vehicle operation utilizing the ODSs and ECs. The Automotive Organizational Maintenance Course (AOMC) is conducted at Camp Johnson, NC and teaches the principles of vehicle maintenance utilizing the ECs and actual tactical vehicles. Additionally, ODSs located at Camp Courtney, Okinawa support sensitive, on-island driver training for III MEF operators in Japan.

Mobile Firearms Trainer (MFT)



The MFT is a trailer-sized live fire range that includes a digital system for displaying targets and scenarios on a screen. Acoustic sensors located alongside the screen to accomplish scoring.

The Mobile Firearms Trainer is available at Marine Corps Base, Quantico, VA.

Main Gun (M1A1) Signature Simulator (MGSS)

The MGSS is used for force on force/MILES/TWIGSS training. With the aid of pyrotechnic charges, the purpose of the device is to simulate visibly and audibly the firing of a tank main gun.

Modular Amphibious Egress Trainer (MAET)



The Modular Amphibious Egress Trainer provides egress training for non-aircrew flyers as well as for other vehicle crews and passengers.





It simulates underwater disorientation caused by rapidly sinking vehicles, aircraft or amphibious vehicles. With the use of modular panels, this system replicates aviation platforms such as, but not limited to, the CH-46, CH-53 and the MV-22, as well as other ground vehicles, such as the LAV-25, AAV and EFV.

The trainer serves as a portion of an overall survival training program for non-aircrew "frequent flyers" that includes Shallow Water Egress Training (SWET) and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) familiarization and usage training.

The MAET is available at Marine Corps Base Hawaii, Camp Hansen - Okinawa, Japan, and Camp Pendleton, CA. Scheduled for future delivery to Camp LeJeune, NC.

Multiple Integrated Laser Engagement System 2000 (MILES 2000)



MILES 2000 is a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. MILES 2000 is designed for use by the MAGTF as a force-on-force engagement simulation training system.

MILES 2000 components included:

- Individual Weapon Systems (M16, M249, M2, M40A1, M240G)
- Anti-Armor Weapons (AT-4, SMAW, TOW)
- Combat Vehicle Systems (M1A1, LAV family, AAV family)
- Combat Support Vehicle Systems (M900, LVS, HMMWV)
- Independent Target Systems (ITS) for structures
- Pyrotechnic Devices (Main Gun Signature Simulator)
- Controller Device/Training Data Transfer Device (CD/TDTD)
- MILES Target Interface Device (moving and stationary targets)
- Automated Small Arms Alignment Fixture (ASAAF)

The MILES 2000 is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Portable Infantry Target Systems (PITS)



PITS are a live fire target system with automatic scoring and are programmable to support various scenarios. This system will be used to train personnel in marksmanship using a realistic threat oriented environment. It is light-weight and one-man portable. Each PITS consists of 60 portable remote controlled target lifters, a battery recharging system and four or six hand-held VHF controllers that are capable of controlling lifters out to a distance of 1500 meters.

PITS are available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.



Precision Gunnery System (PGS)



The PGS is a LAV-25 mounted training device that assists the LAV crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. PGS provides the crew with visual and sound effects that accurately simulate real firing conditions.

The PGS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Precision Gunnery Training System 2 - TOW Indoor



This trainer is used to train Tube-launched, Optically tracked, wire-guided (TOW) gunners from novice through advanced (sustainment) levels of skill.

The PGTS 2 - TOW Indoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Precision Gunnery Training System LAV-AT

The trainer provides LAV-AT gunner indoctrination, tracking instruction, practice, and qualification for the TOW (Tube-launched, Optically-tracked, Wire-guided) Weapons System. The trainer consists of an instructor console, LAV-AT interface. A target set (including vehicle adapters), and a missile simulation round. The missile simulation round is the same size, shape, and approximate weight as the tactical TOW missile.

The PGTS LAV-AT is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, and Quantico, VA.

Precision Gunnery Training Systems - TOW - Field Tactical Trainer (FTT) (Outdoor)



The AN/TWQ-T5 Precision Gunnery Training System TOW Outdoor (PGTS TOW Outdoor) is used to teach precision gunnery skills to TOW gunners in the field. This training can occur at designated ranges, general outdoor areas, or representative tactical environments. The Outdoor TOW system can be used for both initial gunner familiarization in an outdoor environment as well as for gunner skill enhancement and progression.

The PGTS - TOW (FTT) Outdoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.



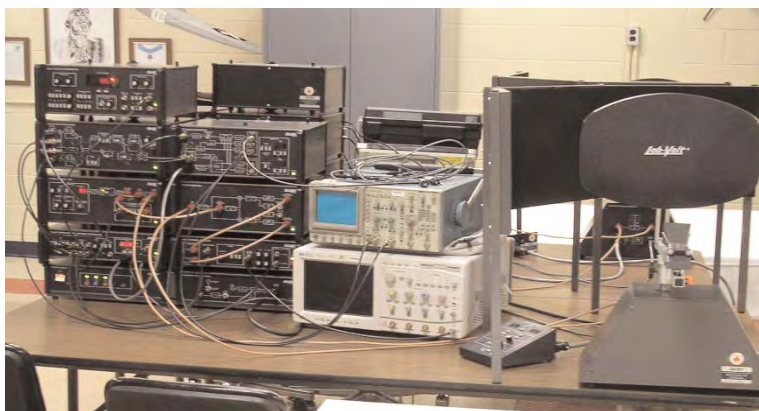
Radio Fundamental Maintenance Training System / NIDA Model 205B



The NIDA model Radio Fundamental Maintenance Trainer/NIDA Models 205B is used to enhance the student's understanding of troubleshooting techniques for basic radio circuitry. The trainer has two basic configurations: AM Transmitter Trainer & Narrow Band FM Transceiver Trainer. The NIDA trainers are used as part of the Marine Corps Communication Electronics School (MCCES) formal training.

The Radio Fundamental Maintenance Trainer/NIDA Model 205B is available at the following locations: Marine Air Ground Task Force Training Command, and 29 Palms, CA.

Radar Fundamentals Training System



The Radar Fundamentals Training System a miniature scale live functional radar system used to teach the fundamentals of analog and digital radar theory. Students will build the radar as they progress through the course, learning the various components and how they interact as well as learning principles of radar jamming from natural and electronic warfare sources.

The Radar Fundamental Maintenance Training System is available at the following locations: Marine Air Ground Task Force Training Command, 29 Palms, CA.

Simunition FX Adaptor Kits

The adaptor kits are a series of user-installed conversion/modification kits that allows various infantry weapons to fire at short range, a low velocity marking ammunition. The FX adaptor kits preclude the weapon from firing live ammunition. This system allows for realistic Force on Force training by providing normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium. Adaptor kits are available for the M16A2, M9, M1911, and MP5.

Simunition FX Adaptor Kits are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Small Arms Gunfire Flash Noise Simulator (24V)

This simulator generates flash and sound for realistic simulation of small arms gunfire.

The Small Arms Gunfire Flash Noise Simulator (24V) is available at MCB Okinawa, Japan.

Small Arms Gunfire Noise Simulator



This device simulates small-arms gunfire (rifle or machine-gun noise) for infantry training, thus adding realism to day or night maneuvers, and conditioning trainees to the sound of operational small caliber weapons. The device consists of a gun simulator, a gas supply, and an AC to DC converter. Outwardly, the device resembles a real machinegun. The simulator may be fired locally or remotely. It can fire single shots or bursts using a metered amount of oxygen and propane that is ignited inside the barrel by a spark plug.

Small Arms Gunfire Noise Simulators are available at the following locations: Marine Corps Bases Camp Lejeune,



NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Special Effects Small Arms Marking System (SESAMS)



SESAMS is a user-installed M249 Squad Automatic Weapon (SAW) conversion/modification kit that allows the M249 SAW to fire, at short range, a low velocity marking ammunition, while precluding the weapon from firing live ammunition. The system provides normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium.

SESAMS are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Stationary Armor Target / Tank Target Mechanism



The Tank Target Mechanism is used for training in the use of anti-armor weapons. It provides the capability of raising and lowering armor target silhouettes through a 90-degree arc and indicates when hits on target silhouettes are made. With the addition of the Pyrotechnic Device the system can also simulate firing hostile and/or target kill. The system

can either be portable or hardwired and is designed for use in various terrains.

Stationary Armor Target / Tank Target Mechanism are employed on several Live-Fire and Simulations Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Surface-to-Air Signature Launcher, Simulator



The Surface-to- Air Signature Launcher Simulator is a launcher mechanism for the Surface-To-Air Missile Signature simulator. This training device provides Marines with a visual representation of simulated enemy surface-to-air missiles.

Tactical Radar Threat Generator (TRTG)



Marine Corps Air Ground Combat Center Tactical Training and Exercise Control Group use the TRTG during Combined Arms Exercises. It is used to enhance aviation training by simulating an enemy "radar threat" for pilots participating in the exercise.

The TRTG is available at the following location: Marine Air



Tank Gunfire Simulator (TGS) - Hoffman



The TGS, also known as the Hoffman Device, is used for force on force MILES/TWGSS training. With the aid of pyrotechnic charges, the device simulates, both visibly and audibly, the firing of a tank main gun. The TGS can be mounted on 90 to 152 mm gun barrels. Each simulator can be loaded with up to nine electrically ignited pyrotechnic charges. The TGSs are checked out to customers who are then responsible for transporting, employing and operating the devices. The customer is also responsible for ordering, transporting, and loading of the pyrotechnics.

The TGS, is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and other Marine Reserve Operational Forces.

Tank Weapon Gunnery Simulation System (TWGSS)



The TWGSS is a tank-mounted training device that assists the crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. TWGSS provides the crew with visual and sound effects to accurately simulate real firing conditions. TWGSS simulates the firing of the tank's main gun, the firing of the coaxially mounted machine gun and the effects of a target vehicle being hit. The TWGSS consists of three subsystems: firing system, target system, and Training Data Retrieval System (TDRS).

TWGSS is interoperable and compatible with PGS, MILES, Laser Target Interface Devices (LTIDs), Thru-Sight Video (TSV) System, and Improved Tank Gunfire Simulator (ITGS)(Hoffman Device).

The TWGSS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Target Holding Mechanism, Tank Gunnery (THMTG)



A predecessor to the Tank Target Mechanism, the THMTG is used to train the use of anti-armor weapons. It provides the capability to raise and lower armor target silhouettes through a 90-degree arc and indicate when hits on target silhouettes are made. With the addition of pyrotechnic devices, the system can also simulate hostile fire and/or target kill. The system can be portable or hard-wired on a range. When not hard-wired, the Offensive Range Controller (ORC) radio controller is used to control and program targets remotely.

The THMTG are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



Terrain Multi-purpose Model

The Terrain Multi-purpose Model is intended for Junior and Senior officers and command staff personnel to utilize for orientation and briefing for logistics and combat involved in marine amphibious assault operations.

The Terrain Multi-purpose Model is available at the following location: MCB Quantico, VA.

Universal Maintenance Training System (UMTS)

The UMTS is a networked motor transportation panel training system that provides realistic troubleshooting and operational training for maintenance personnel tasked with support of system related to diesel engines and hydraulic subsystems.



The station allows control and operation of the simulated equipment represented by the following display panels:

- ..- 11H118/4 Tactical Vehicle Wiring and Lighting System
- 11H118/6 Airbrake and Air Operated Accessory System
- 11H118/8 LVS Auxiliary Hydraulic Systems
- 11H118/9 LVS Hydraulic Steering System.

The UMTS is available at the following location: MCCSSS, Camp Johnson, NC.

Virtual Combat Convoy Trainer - Marine (VCCT-M)



The VCCT-M is used to train Marines in a virtual environment the skills necessary to be successful in combat convoy operations. The simulation provides various scenarios displayed on 180 degrees of screen around a HWMMV w/M2 mount mockup.





Fielded Marine Corps Aviation Training Systems

The PM TRASYS Aviation Liaison Division facilitates the development and fielding of USMC aviation training systems across the continuum of Air Combat Element (ACE) training needs. The Aviation Liaison Division works within the NAVAIR Training Systems Division, Orlando (NAVAIR Orlando) Program Directorate for Aviation in Orlando, Florida. Division members are members of the Aviation Training System - Transformation Task Force, which is tasked by the Deputy Commandant for Aviation to implement Marine Corps Aviation Training plans and policy as established in the Aviation Campaign Plan. The predominant role of the Aviation Liaison Division is to interface with and support fleet participation in aviation training system acquisitions. The following listing of Fielded Aviation Systems is provided with this document for information purposes only. The acquisition authorities for these aviation devices are: NAVAIR PMA-205 and NAVAIR Orlando.

AH-1W Weapon System Trainer (WST), Device 2F136 (S/N 1&2)

The two AH-1W Weapons System Trainers are hydraulically operated six-degree-of-freedom full motion flight simulators. Each trainer consists of two domes housing the pilot and gunner stations separately, and contains separate motion systems, instructor stations, computer systems, and independent flight controls.

The AH-1W Weapons System Trainer (WST) is suitable for all basic and advanced pilot/gunner training as defined in the T&R syllabus. Training capability includes all normal and emergency procedure operations in day, night, instrument, and NVG environments. Full weapons and tactics training are accomplished using current real world air and ground threats. The pilot or gunner may train individually, at the same time on separate missions, or simultaneously on one complete mission. A current upgrade will allow device S/N 1 to network with other trainers for real time multi-ship training in a tactical environment.



Location: MCAS New River, NC and MCAS Camp Pendleton CA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AH-1W Aircrew Procedures Trainer (APT), Device 2F170 (S/N 1,2,3)



The AH-1W APT is a non-motion device consisting of a cockpit assembly, an Instructor Operator Station (IOS), and a visual system. The device is housed in three (3) mobile units, MIL-VANs, complexed together to provide a complete simulation facility.

The APT provides an accurate simulated environment for the pilot and gunner in cockpit familiarization, engine operation, tactical navigation, weapons release, and operations utilizing both normal and emergency procedures. The IOS is located adjacent to the cockpit assembly.

Location: MCAS Camp Pendleton, CA, NAS Atlanta, GA, and HMLA Johnstown, PA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



AV-8B Multi-Task Trainer (MTT), Device 15A23

The AV-8B Multi-Task Trainer is a portable desktop device, fast and easily assembled and disassembled. The Multi Task Trainer provides to AV-8B student pilots training capability in



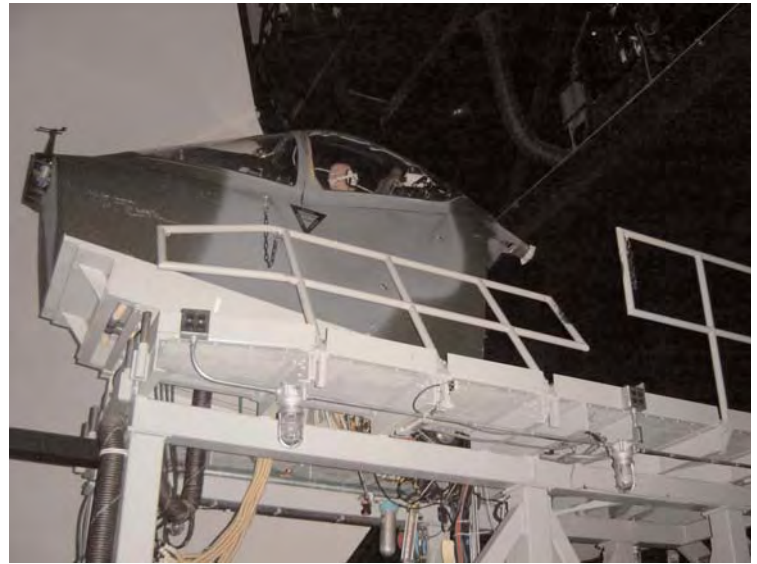
those aspects related to the operation of the Air-to-Ground and Air-to-Air modes of the APG- 65 Radar system. It provides classroom training capability in those aspects related to operation of the radar. Trainees should be previously familiar with general AV-8B flight characteristics.

The device simulates, AV-8B performance characteristics, with reasonable accuracy for up and away flight with respect to acceleration, deceleration, turning, climb, and descent. The system hardware includes the following: a flat panel upper display that depicts the visual scene with superimposed HUD; a flat panel lower display depicting the Multi Purpose Color Displays (MPCDs) and control area provided with touch panel; two Personal Computers (into a single desktop cabinet) with two graphics boards and internal UPSs; Real Hands On Stick And Throttle System (HOTAS); and, interfaces for HOTAS, Touch Panel system and auxiliary Keyboard and Mouse.

Location: MCAS Cherry Point NC, MCAS Yuma AZ.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Weapons System Trainer (WST), Device 2F149



Device 2F149 is used to train student pilots in AV-8B operational and tactical procedures. Operational procedures include: V/STOL and conventional take-off and landing, aircraft control and instrument flight procedures. Tactical procedures include: weapons delivery, low altitude tactics, offensive air combat maneuvering, and defensive electronic countermeasures. The WST is also used to reinforce training in normal/degraded/emergency operations of simulated aircraft systems.

Device 2F149 is installed in a multi-room training facility with a high bay area. Device 2F149 is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room, Debrief and Utility Room.

The trainee station includes a full size replica of the AV-8B crew station and a visual scene projection system. The crew station contains controls, indicators, and cockpit equipment required to perform the training mission. A flight control system simulates AV-8B flight control characteristics. A G-suit/seat, G-dimming, and buffet system simulates G-forces and motion cuing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



AV-8B Night Attack Weapons System Trainer (WST), Device 2F150

Device 2F150 is used to train student pilots in AV-8B operational and tactical procedures in day and night environments. Operational procedures include: V/STOL and conventional take-off and landing, aircraft control and instrument flight procedures.



Tactical procedures include: weapons delivery, low altitude tactics, offensive air combat maneuvering, and defensive electronic countermeasures. The NAWST is also used to reinforce training in normal/degraded/emergency operations of simulated aircraft systems.

Device 2F150 is installed in a multi-room training facility with a high bay area. Device 2F150 is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room, Debrief Room and Utility Room.

The trainee station includes a full size replica of the AV-8B crew station and a visual scene projection system. The crew station contains controls, indicators, and cockpit equipment required to perform the training mission. A flight control system simulates AV-8B flight control characteristics. A G-suit/seat, G-dimming, and buffet system simulates G-forces and motion cuing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.

Location: MCAS Yuma AZ

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Radar Night Attack Weapon System Trainer (WST), Device 2F150A

Device 2F150A is used to provide training in those unique skills and techniques involved in Vertical/Short Takeoff or Landing (V/STOL), basic aircraft control, instrument flight



procedures, utilizing Air-to-Ground and Air-to-Air Weapons Delivery Modes of the AN/APG-65 Radar, Night Vision Goggles (NVG), Forward Looking Infrared (FLIR), Defensive Electronic Countermeasures, and normal/degraded/emergency mode operations for all AV-8B Plus Radar Night Attack Aircraft systems under day/dusk/night conditions. It provides synthetic training to complement airborne training in the development of pilot



skills and techniques to effectively use the aircraft to its full performance.

The Device 2F150A Radar Night Attack Weapon Systems Trainer (RNAWST) is intended to allow the pilots to obtain training

associated with both basic and advanced flight and mission tasks and to operate the tactical and mission equipment, including avionics and weapon systems, within their full operating envelope in day and night modes of operation. NVG stimulation enables aircrew to utilize their own ANVIS-9 NVGs.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



AV-8B Radar Night Attack Weapons System Trainer (WST), Device 2F150B

Device 2F150B is used to develop pilot proficiency in AV-8B Harrier II Plus, radar equipped aircraft operations in day and night environments. Operational Procedures include:



VSTOL and conventional takeoff and landing, aircraft control and instrument flight procedures. Tactical procedures include weapons delivery, low altitude tactics, offensive air combat maneuvering, defensive electronic countermeasures, and AN/APG-65 radar operation. The RNAWST is also used to reinforce training in normal/degraded emergency operations of simulated aircraft systems.

Device 2F150B is installed in a multi-room facility with a high bay area. Device 2F150B is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room and Utility Room.

The trainee station includes a full size replica of the AV-8B Harrier II Plus crew station and a visual scene projection system. The crew station contains control indicators, and cockpit equipment required to perform the training mission. Crew station multi-purpose color displays provide simulated AN/APG-65 radar images. A flight control system simulates AV-8B Harrier II Plus flight control characteristics. A g-suited, g-dimming, and buffet system simulates g-forces and motion cueing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.

Location: MCAS Yuma AZ

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Radar Night Attack Weapon System Trainer (WST), Device 2F150C

Device 2F150C is used to provide training in those unique skills and techniques involved in Vertical/Short Takeoff or Landing (V/STOL), basic aircraft control, instrument flight procedures, utilizing Air-to-Ground and Air-to-Air Weapons Delivery Modes of



the AN/APG-65 Radar, Night Vision Goggles (NVG), Forward Looking Infrared (FLIR), Defensive Electronic Countermeasures, and normal/degraded/emergency mode operations for all AV-8B Plus Radar Night Attack Aircraft systems under day/dusk/night conditions. It provides synthetic training to complement airborne training in the development of pilot skills and techniques to effectively use the aircraft to its full performance.

The Device 2F150C Radar Night Attack Weapon Systems Trainer (RNAWST) is intended to allow the pilots to obtain training associated with both basic and advanced flight and mission tasks and to operate the tactical and mission equipment, including avionics and weapon systems, within their full operating envelope in day and night modes of operation.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Power Plants Systems Trainer, Device 11H93

The AV-8B Power Plant Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212). The trainer provides power plant maintenance, troubleshooting, and unscheduled corrective



maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of components. The trainer simulates aircraft systems that are part of the power plant system. The trainer allows the instructor to insert any one of 43 software induced malfunctions relating to the engine system. The engine, as simulated on the trainer, responds to changes of atmospheric conditions, altitude and airspeed. The performance is also dependent of water injection and different bleed conditions caused by the vectored thrust of the engine nozzles, which are fully functional on the trainer. All fuel control adjustments are active and respond as the aircraft.

The AV-8B Power Plant Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina. Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Avionics Systems Trainer, Device 11H94

The AV-8B Avionics Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Communication / Navigation / Weapon Systems Technician (MOS 6312). The trainer provides avionics systems maintenance training including troubleshooting, and unscheduled corrective maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B avionics. The trainer simulates aircraft avionics systems, which are modeled in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the fuselage including the cockpit and a tail module board containing a replica of the vertical fin, and system ground support equipment are provided as part of the student station to accomplish the training objectives.

The AV-8B Avionics Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.



AV-8B Electrical / Cockpit Systems Trainer, Device 11H95

The AV-8B Electrical / Cockpit Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Electrical Systems Technician (MOS 6332). The trainer provides electrical system maintenance training including troubleshooting, and unscheduled correc-



tive maintenance which involve identifying instructor inserted malfunction/failure and removal/replacement of designated components within the AV-8B electrical systems. The trainer simulates the aircraft electrical system, lighting, AC/DC power generating and bus logic. A full lighting system including exterior lights, console lights, instrument lights and warning, caution and advisory lights are provided. The trainer has full engine run capability. A complete engine aural cue system is provided. All engine instrumentation, temperature limiting and water injection may be fully tested. Other systems include Inertial Navigation, Air Data Computer and Flight Reference. There are twenty-six door areas with more than eighty active electrical connectors, five hundred active test points and 112 malfunctions available for training.

The AV-8B Electrical/Cockpit Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



AV-8B Egress/Environmental Systems Trainer, Device 11H96

The AV-8B Egress / Environmental Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Safety Equipment Mechanic (MOS 6048).

The trainer provides training on in cockpit maintenance, troubleshooting, and unscheduled corrective maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B ECS, canopy, and ejection seat systems. The trainer simulates the aircraft systems that are part of the cockpit system. The trainer consists of a complete AV-8B cockpit with an operational but inert ejection seat, canopy and ladder, active forward Environmental Control System (ECS), On-Board Oxygen Generating System and Anti-G System. All of the Ground Support Equipment (GSE) and test equipment necessary for testing and troubleshooting are supplied and used as with the actual aircraft.

The AV-8B Egress / Environmental Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina,.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



AV-8B Fuel Systems Trainer, Device 11H97

The AV-8B Fuel Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212) and Aircraft Electrical Systems Technician (MOS 6332). The trainer provides fuel system maintenance training including



troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted

malfunctions/failures and removal/replacement of designated components within the AV-8B fuel system.

The trainer simulates the aircraft fuel system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the forward fuselage (cockpit), fuel tanks, and module boards containing items found in other parts of the aircraft and system GSE are provided as part of the student station to accomplish the training objectives. The trainer is divided into five (5) major functional systems: power distribution, computation, real-time input/output (I/O), instructor display/control, and student station systems. The trainer demonstrates the operation, fault isolation, adjustment, and testing of the following fuel systems; fuel servicing, fuel pressurization and vent, fuel distribution, fuel jettison, and fuel quantity and level indications.

The AV-8B Fuel Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Armament Systems Trainer, Device 11H98

The AV-8B Armament Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Ordnance Technician (MOS 6231).



The trainer provides armament systems maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B armament system. The trainer simulates the aircraft armament system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the fuselage with left wing, cockpit and module board containing items found in other parts of the aircraft and ground support equipment are provided as part of the student station to accomplish the training objectives. The trainer is divided into five (5) major functional systems: power distribution, computation, real-time input/output (I/O), instructor display/control, and student station systems.

The AV-8B Armament Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems



AV-8B Flight Controls System Trainer, Device 11H99

The AV-8B Flight Controls System Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Structures Mechanic (MOS 6252) and Aircraft Electrical Systems Technician (MOS 6332). The trainer provides fuel system maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B flight control system. The trainer simulates the aircraft flight control system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the cockpit/ fuselage with left wing, and a ground support equipment module board containing items found in other parts of the aircraft are provided as part of the student station to accomplish the training objectives.



The AV-8B Flight Controls System Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina. Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Landing Gear System Trainer, Device 11H100

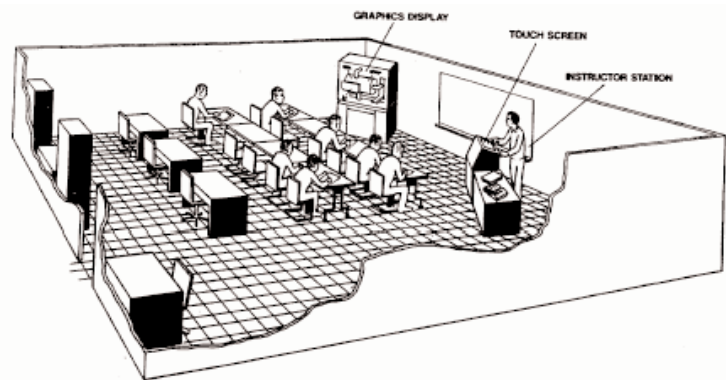
The AV-8B Landing Gear System Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212) and Aircraft Electrical Systems Technician (MOS 6332). The trainer provides landing gear system main-



tenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B landing gear system. The trainer simulates the aircraft landing gear system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the fuselage (cockpit), fuselage, and a module board containing system ground support equipment are provided, as part of the student station, to accomplish the training objectives.

The AV-8B Landing Gear System Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina. Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Instructional Graphics Training, Device 11H156



The AV-8B Instructional Graphics Training Device assists the instructor in teaching AV-8B maintenance training. This device provides the instructional tools necessary to enhance the training environment for the AV-8B maintenance trainee and increases the ability of the instructor to demonstrate system operation dynamically for the accomplishment of physical tasks.

The current configuration of the device consists of CUM 166 (Day Attack Configuration), CUM 167 (Night Attack Configuration), CUM 234 (RADAR/Strike Attack Configuration), and CUM 236 (RADAR Attack Configuration). Device 11H156 consists of three configurations: Instructional Graphics Training Device; Instructor Graphics Review Station, Device 11H156/1; and Graphics Development Station, Device 11H156/2.

Device 11H156 consists of two basic units, an Instructor Station (IS) and the projection system utilizing a PROXIMA DP5900 projector. The IS is essentially a podium which houses an IBM-compatible Pentium II 350 MHz with a 17-inch touch screen monitor which the instructor uses to control the graphics being presented to the student on the associated projection system.

The AV-8B Instructional Graphics Training Device is located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.



CH-46E Helicopter Aircrew Procedures Trainer (APT), Device 2F172



The CH-46E Aircrew Procedures Trainer is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events.

The CH-46E APT is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactically relevant training (T&R 200 & 300 level events) in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 200 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.

Location: MCAS Futenma, Okinawa, Japan.

Acquisition Organization: Naval Aviation Systems
Command (NAVAIR) PMA-205 / NAVAIR Training
Systems Division Orlando

CH-46E Helicopter Weapons System Trainer (WST), Device 2F173 (S/N 1&2)

The CH-46E WST are hydraulically operated six-degree-of-freedom full motion flight simulators. Each WST consists of a fully functional CH-46E cockpit for pilot and copilot training and an instructor operator station.



The CH-46E WST is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. In addition to supporting basic T&R 100 level training, the device supports real-time networked training (T&R 200 & 300 level events) against threats generated via the Tactical Environment Network (TEN). The visual system fully supports Night Vision training using standard aircrew NVG's.

Location: MCAS Miramar CA.

Acquisition Organization: Naval Aviation Systems
Command (NAVAIR) PMA-205 / NAVAIR Training Systems
Division Orlando

CH-46E Helicopter Aircrew Procedures Trainer (APT), Device 2F191



The CH-46E APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events.



The CH-46E APT is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical relevant training (T&R 200 & 300 level events) in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The SEOS 60 X 220 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Aircrew Coordination and Cockpit Resource Management training.

Location: MCAS New River, Jacksonville, NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-53D Helicopter Operational Flight Trainer (OFT), Device 2F121

The CH-53D (OFT) is a hydraulically operated six-degree-of-freedom full motion flight simulator. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events. This is the only CH-53D representative



flight simulator available to the CH-53D community.

The CH-53D OFT simulates the response of the CH-53D controls, instruments and systems, and provides visual, aural, and motion sensations. The motion system provides six degrees of freedom to simulate actual flight., and supports Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM). A recent upgrade added an electronic control loader for precision flight control performance, a full-dome-on-motion visual display that allows day, night, and night vision goggle operation for both pilots, Tactical Environment Network for tactical interplay and networking, and an upgraded Aviation Survivability Equipment suite. This upgrade The trainer is suitable for 100-300 level T&R events and remains supportable until 2012 when withdrawn from service.

Location: MCB Kaneohe Bay, HI.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-53E Helicopter Aircrew Procedures Trainer (APT), Device 2F171



The CH-53E APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events.

The CH-53E APT is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports night vision device training, and the tactical environment network provides real time networked operation with other devices for advanced tactically relevant training (T&R 200 & 300 level events) in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 200 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.

Location: MCAS Futenma, Okinawa, Japan

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



CH-53E Helicopter Weapons System Trainer (WST), Device 2F174 (S/N 1&2)

The CH-53E WST are hydraulically operated six-degree-of-freedom full motion flight simulators. Each WST consists of a fully functional CH-53E cockpit for pilot and copilot training and an instructor operator station.

The CH-53E WST is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. In addition to supporting basic T&R 100 level training, the device supports real-time networked training (T&R 200 & 300 level events) against threats generated via the tactical environment network. The visual system fully supports night vision device training using standard aircrew night vision goggles.

Location: MCAS Miramar, San Diego, CA and MCAS New River, Jacksonville, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.



CH-53E Helicopter Aircrew Procedures Trainer (APT), Device 2F190



The CH-53E APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events.

The CH-53E APT is a flight trainer capable of simulating all normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports night vision device training, and the tactical environment network provides real time networked operation with other devices for advanced tactical relevant training (T&R 200 & 300 level events) in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 220 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM).

Location: MCAS New River, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

EA-6B (ICAP II) Operational Flight / Navigation Trainer (OFT), Device 2F143

Device 2F143 provides training, for the pilot and electronic countermeasures officers 1, in normal, abnormal, and emergency procedures involving all phases of flight, including takeoff and



landing from carrier and land, and enroute flight of all types. The trainer also provides training in navigation skills for the pilot and electronic countermeasures officers 1. The EA-6B trainer is a fixed-base trainer designed for installation in a permanent-type military facility. The trainer will provide training in the development of pilot and electronic countermeasures officers /copilot skills and techniques to efficiently operate the EA-6B aircraft.

Device 2F143 simulates the operational and performance characteristics of the EA-6B aircraft on the ground and throughout the flight envelope (including inflight refueling), recreating carrier takeoff and landing effects, realistic cockpit sounds, motion, visual scenes, instrument presentations, navigation and communication reception, and feel of the flight controls.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



EA-6B Weapon System Trainer (WST), Device 2F178

The 2F178 is a deployable, self-contained, EA-6B, Block 89A, WST providing pilots and electronic countermeasures officers the ability to maintain a high state of proficiency in:

- (a) Operating the aircraft and its subsystems
- (b) Executing normal procedures
- (c) Recognizing malfunctions and abnormal conditions
- (d) Executing corrective and recovery procedures
- (e) Executing mission procedures in a realistic tactical environment

The simulation training scenario presents pre-flight checks and conditions, multiple operations throughout the flight envelope and post flight procedures and debriefings. The Flight Station and Tactics Station can be used independently and concurrently, or combined for integrated training. **Flight Station (FS)** - Supports training in: instrumentation, carrier launch and recovery procedures, take off and landing, climb out and approach, enroute flight, normal navigation, formation flight, refueling, low altitude visual navigation, and emergency procedures.

Tactics Station (TS) - Supports training in: emitter analysis and recognition, jammer assignments, HARM launch procedures, and emergency procedures.

Location: MCAS Iwakuni JA

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



EA-6B (ICAP II) Team Tactics Trainer, Device 15E22C

Device 15E22C provides introductory, proficiency, and refresher training for EA-6B ICAP II Electronic Countermeasures Officers. US Navy squadrons at NAS Whidbey Island, WA and US Marine Corps squadrons at MCAS Cherry Point, NC employ Device 15E22C in their EA-6B



electronic countermeasures officers training programs. The device trains officers with varying levels of electronic warfare and ALQ-99 weapons system experience. The trainee station is an accurate reproduction of the EA-6B ICAP II rear cockpit controls. All the controls used with the Tactical Jamming System (TJS) are fully operational. Trainees receive practical experience using the TJS in training exercises that employ scenarios of varying complexity.

Instructors are provided with a raised viewing platform behind the trainee station. The instructor station includes color graphic displays of scenario conditions and a function keyboard. The keyboard controls the training exercised displays and the trainer mode. Scoring displays provide instantaneous and cumulative student performance information.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

F/A-18 Weapons Tactics Trainer (WST), Device 2E7

Device 2E7 is a dual training complex, consisting of two identical training areas and numerous supporting stations and consoles. Each training area consists of an actual F/A-18 cockpit



mounted near the center of a large sphere. Simulated images of the sky, earth, targets, and gunfire are projected upon the inner surface of the sphere and are viewed by the trainee during the training exercise. During the training exercises, the trainee will utilize all flight and weapon controls of the cockpit. He will also experience all sights, sounds, accelerations, and buffets that would be encountered on an actual flight mission.

Training exercises are arranged and monitored by an instructor who has direct communication with the trainee(s) during the exercises. Independent or coordinated exercises are possible for two trainees. The trainees may aid or oppose each other in a coordinated exercise. Alternatively, either of both trainee(s) may oppose an instructor and/or a computer. Air-to-air combat training exercises are possible in any of the following three ways: trainee opposes a threat aircraft (1 on 1); trainee opposes two threat aircraft (1 on 2). The instructor has the capability to record the training exercises for later playback and discussion with the trainee(s). The playback may also be "frozen" at any time for detailed examination.

Location: MCAS Miramar CA, MCAS Beaufort SC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

F/A-18 Operational Flight Trainer (OFT), Device 2F132

Device 2F132

is a computer-controlled trainer that faithfully simulates the operation and response of the F/A-18 aircraft flight controls, instruments, and systems, as well as its visual, aural, environmental, and motion sensations. Provides aircrew with cockpit orientation, normal and emergency procedures training, dusk/night visual and instrument takeoff and landing from carrier or airfield, and limited air-to-ground weapons delivery. The dusk/night visual display shows the surrounding carrier/airfield terrain throughout takeoff, maneuvers, and landing approach as a function of the aircraft attitude, altitude, and speed. Aural effects, such as engine turbine, engine nozzle, accessories, air conditioning turbine, and airflow also are simulated. An ejection seat shaker provides buffet simulation. A G-seat, used with a G-suit, provides motion cues. The trainer includes such automated instructional features as procedural sequence monitoring, preprogrammed insertion of malfunctions, dynamic replay, parameter recording,



checkride and auto mission programs, and demonstration flights. The trainer also can provide hard copy printouts for evaluating trainee performance.

Location: MCAS Miramar CA, MCAS Beaufort SC, MCAS Iwakuni, JA

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

FA-18D Aircrew Procedures Trainer (APT), Device 2F192



The F/A-18D APT is a multi-purpose trainer that is configured as an F/A-18D Advanced All Weather Night Attack Fighter aircraft. It is designed to provide cockpit familiarization for the pilot and Weapons & Sensors Officer (WSO), in-flight normal and emergency procedures, and advanced mission oriented training. In addition, the F/A-18D APT provides a capability to evaluate and test pilots and WSO's, and enables them to interact during normal and emergency operations. The APT includes a full range of navigational flight instruments, day and night flight capability in a variety of weather/environmental conditions, survival equipment, and weapon delivery capabilities that simulate the aircraft.

The F/A-18D APT provides training in the following areas: aircraft ground and airborne systems operations, limited Air Combat Maneuvering (ACM), Air-to-Air Weapons Delivery, Radar Imagery, Radar Warning System Operation, Aircraft Control, Normal/Emergency procedures, Air-to-Ground (A/G) Weapons Delivery with associated A/G Sensors Video, and Targeting Forward Looking InfraRed (FLIR). Performance simulation is provided for air-to-air and air-to-ground weapons. The aircraft and weapons are dynamically and computationally related to each other so that the pilot and WSO see an accurate visual simulation of targets, and weapons deployment.

The F/A-18D APT will be interoperable with the CH-53E APT Device 2F190 and the CH-46E APT Device 2F191 to provide integrated tactical training. In the Integrated Mode, the APT devices will be capable of collaborative training via the Marine Corps supplied Tactical Environment Network (TEN).

Location: MCAS Iwakuni, JA

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



F/A-18 Part Task Trainer (PPT), Device 15C13

Device 15C13 is a PPT for the F/A-18 aircraft. To provide orientation, familiarization with the "Hands-On-Throttle-And-Stick" (HOTAS) controls, limited radar intercept geometry and an introduction to the basic capabilities of the combined



use of HOTAS, the Up Front Control (UFC), the Master Monitor Display (MMD), the Multi-Function Display (MFD), the Electronic Horizontal Situation Indicator (EHSI), the Heads Up Display, and the armament panel.

Location: MCAS Miramar, CA

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

KC-130R Aircraft Operational Flight Trainer (OFT), Device 2F107

The KC-130R OFT is a hydraulically operated six degree of freedom full-motion flight simulator. The device contains a fully functional cockpit for training the pilot, copilot, and flight engineer, and contains an Instructor Operator station for managing the training event.



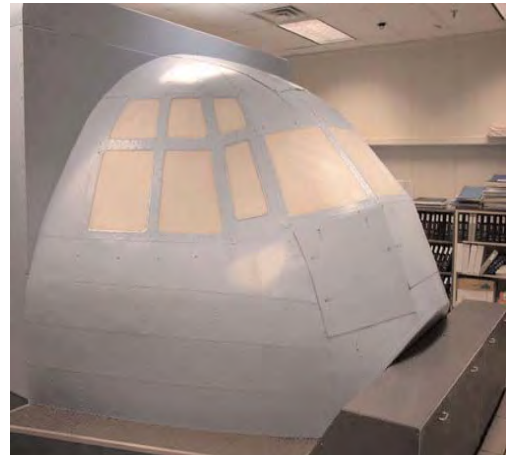
The KC-130R OFT has the capability to train the flight crew in all normal and emergency procedures. A recent modification improved the out-the-window visual display to a panoramic 40 X 180 degree field of view dome. The new projection system supports training in simulated day, night, instrument, and NVG environments. With the integration of the tactical environment network and current Aircraft Survivability Equipment (ASE) with this modification, the trainer is capable of real-time networked operation in a tactical environment against simulated threats.

Location: MCAS Miramar, CA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

KC-130R Aircraft Operational Flight Trainer (OFT), Device 2F107A

The KC-130R OFT is a non-motion and non-visual device, designed to provide the necessary cockpit familiarization and ground training for personnel who will become pilots, copilots, and flight engineers for the KC-130R aircraft.



The device trains flight crews in limited phases of ground and inflight operational cockpit procedures and systems management techniques required to operate the KC-130R aircraft. Mechanics and crew chiefs can also be trained in ground operations related to cockpit procedures such as engine start-up, run-up, checkout and malfunction management. Motion and visual cues are not simulated.

The device provides computer controlled, simulated operation of the KC-130R cockpit systems involved in the performance of normal and emergency flight procedures. The Instructor Operator Station enables the instructor to observe and control the training situation. The Digital Control Loading System gives the student pilot the same flight control feel of the aircraft.

Location: MCAS Cherry Point, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



KC-130T Aircraft Operational Flight Trainer (OFT), Device 2F152

The KC-130T OFT is a hydraulically six degree of freedom full-motion device. A fully functional cockpit provides training for pilots, copilots, and flight engineers. This device provides training for normal and emergency aircraft procedures as limited tactical missions. Location: MCAS Cherry Point, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



KC-130T Aircraft Aircrew Procedures Trainer (APT), Device 2F176



The KC-130T APT is a non-motion based system designed to provide realistic training in procedures, flight modes/conditions, and mission profiles of the KC-130T aircraft.

The KC-130T APT provides simulated training for Marine Corps pilots, flight engineers, and navigators in normal and emergency procedures in the KC-130T aircraft. In addition to the aircrew stations, the device has an Instructor Operator Station to manage training events. The panorama screen provides an out-the-window view for the aircrew, and the visuals support day, night, instrument and night vision goggle training. The device is networked with the other Okinawa flight simulators via the tactical environment network, and supports tactical training in a threat environment.

Location: MCAS Futenma, Okinawa, Japan.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

MV-22 Full Flight Simulator (FFS), Device 2F182

The MV-22 FFS simulates the MV-22B aircraft and is suitable for training all normal and emergency procedures. The three devices are networked and capable of training pilots and copilots in all aspects of



flight to include multi-ship tactics in a simulated threat environment. The FFS is mounted on a 6 Degree of Freedom motion base with a secondary motion system to simulate the rotor vibrations felt by the aircrews. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.

Location: MCAS New River, Jacksonville, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando



MV-22B Flight Training Device (FTD), Device 2F183

The MV-22 FTD simulates the MV-22B aircraft and is suitable for training all normal and emergency procedures. The device is networked and capable of training pilots and copilots in all aspects of flight to include multi-ship tactics in a simulated threat environment. The FTD has a secondary motion system to simulate the rotor vibrations felt by the aircrews. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.

Location: MCAS New River, Jacksonville, NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.

UH-1N Aircrew Procedures Trainer (APT), Device 2F175



The UH-1N APT non-motion trainer consists of a cockpit assembly, an Instructor Operator Station (IOS), and a visual system. The device is housed in two (2) mobile units, MIL-VANs, assembled together to provide a complete simulation facility. The IOS is located adjacent to the cockpit assembly. The APT provides an accurate simulated cockpit environment for the pilot and copilot in cockpit familiarization, engine operation, tactical navigation, and operations utilizing both normal and emergency procedures. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.

Location: MCAS New River NC.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

UH-1N Weapon System Trainer (WST), Device 2F161

The UH-1N WST is a hydraulically operated six-degree-of-freedom full motion flight simulator. The WST consists of a fully functional cockpit for pilot and copilot training and an instructor operator station. The UH-1N Weapon Systems Trainer is a flight trainer capable of simulating all normal operations and emergency procedures under day, night,



and instrument conditions. In addition to supporting basic T&R 100 level training, the device supports night vision device training using standard aircrew night vision goggles. While the device utilizes the tactical environment network for training in a threat environment, the device is not networked with other simulators at this time.

Location: MCAS Camp Pendleton, CA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

VH-3D Helicopter Aircrew Procedures Trainer (APT), Device 2F180



The VH-3D APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training the aircrew, and contains an Instructor Operator Station for managing training events. The VH-3D is only flown by the Presidential Support Squadron, HMX-1.

The VH-3D APT is a flight trainer capable of simulating all normal operations and emergency procedures in simulated day, night, instrument and night vision goggle environ-



ments. A fully functional cockpit provides training for both the pilot and copilot. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The instructor is physically located at the Instructor/Operator Station directly aft of the cockpit. The 150 X 55 degree panorama display provides aircrew with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.

Location: MCAF Quantico, VA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

Division Orlando

VH-60N Helicopter Aircrew Procedures Trainer (APT), Device 2F181



The VH-60N APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training the aircrew, and contains an Instructor Operator Station for managing training events. The VH-60N is unique in the Marine Corp inventory since it is only flown by the Presidential Support Squadron, HMX-1.

The VH-60N APT is a flight trainer capable of simulating all normal operations and emergency procedures in simulated day, night, instrument and night vision goggle environments. A fully functional cockpit provides training for the pilot, copilot, and the Communication Systems Officer (CSO). In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The instructor is physically located at the Instructor Operator Station directly aft of the cockpit. The 150 X 55 degree panorama display provides aircrew with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.

Location: MCAF Quantico, VA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems





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